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OBSERVATIONS ON THE HEART IN MYXEDEMA*

With Special Reference to Dilatation and Angina Pectoris

BY J. H. MEANS, M.D., P. D. WHITE, M.D., AND C. I. KRANTZ, M.D.

THE term "myxedema heart" has crept into the literature (References 1, 2, 3, 4, 5). Whether there really exists an abnormality sufficiently characteristic of myxedema to justify such an appellation is doubtful. Certain electrocardiographic changes are found quite commonly, but other oft-occurring cardiac features are lacking. Nevertheless, the condition of the heart is important in myxedema as has been justly pointed out by Christian⁶. In the present paper we shall discuss the significance of cardiac dilatation and of angina pectoris in myxedema in connection with the reports of two cases.

A. CARDIAC DILATATION IN MYXEDEMA

Zondek¹, in 1918, described a type of cardiac abnormality seen in myxedema, characterized, he says, before treatment with thyroid, first, by a dilatation of the left and also the right heart which may be of very high grade, second, by indolent heart action, slow pulse, normal blood pressure, and third, by abnormalities of the auricular (P) deflections and final ventricular (T) deflections of the electrocardiogram, consisting chiefly in low amplitude; and after treatment with thyroid by first, the return of the high grade enlargement to somewhere near a normal relationship; second, livelier heart action, marked increase in pulse rate, no change in the height of the blood pressure; and third, gradual increase of the P and T deflections of the electrocardiogram to normal amplitude.

He reports four such cases, with x-rays in one showing marked reduction in the size of the heart's silhouette after thyroid medication. The decrease in transverse diameter was from 19.7 to 17.8 cms. Assmann², in 1919, reported a similar case of "myxedema heart" which showed a decrease in transverse diameter from 16.7 to 12.2 cms. after three weeks of .3 grams of thyroïdin daily. Meissner³ reports three cases of myxedema in one of which a decrease in transverse diameter of the heart from 20.0 cms. to 15.5 cms. occurred during thyroid medication.

In this country Fahr⁴, in 1925, reported three

cases of what he regards as "myxedema heart", which he says is characterized by enormous dilatation of all chambers of the heart and an absence, or negativity of the T wave of the electrocardiogram in Lead I. The dilatation of the heart disappears rapidly and the T wave becomes positive under thyroid medication.

One gets the impression from Fahr's paper that he regards a cardiac disturbance of the type described as of fairly frequent occurrence in myxedema. We have lately been making an analysis of all cases of myxedema seen in the Thyroid Clinic of the Massachusetts General Hospital in the last twelve years, being in all 48 cases, and in the course of this, in view of Fahr's paper, have made a special search for the sort of thing he describes. The nearest approach to it that we have discovered is the following case, in which, while there was definite cardiac enlargement which subsided under thyroid, the initial enlargement was not as pronounced as in Fahr's cases.

CASE 1. Myxedema with Cardiac Dilatation; Reduction of Heart Size and Sudden Death following Thyroid Administration.

A married woman of 44 entered the hospital on January 26th. Her illness had started five years before with swelling in her feet, and a diagnosis of hypothyroidism had been made. She had taken thyroid rather intermittently until ten months before entry to hospital, but none since. While off thyroid she had had increased swelling involving face, feet and hands, and had felt chilly and markedly sluggish. Her sweating was greatly diminished, and her speech somewhat thick; there had been definite dyspnoea on exertion for ten months. Her skin had been coarse since the onset of her illness, but she had noticed no change in her hair. She had gained weight, but she did not know how much.

Physical examination showed a typical myxedematous facies, thick tongue, thick speech, but fair mental alertness. The face, including eyelids, was puffy. The skin was dry and coarse. The fingers were rather tapering. The hands were puffy and there were fat pads over the scapulae. The hair was not noticeably coarse, but the axillary and pubic hair was very sparse. The heart was regular and not rapid. No definite enlargement was made out on physical examination. There was a blowing systolic murmur over the whole precordium, loudest at the base. The lungs were clear. The liver edge was felt 2 cms.

*From the Thyroid Clinic of the Massachusetts General Hospital.

†The original reads "or"; we presume a typographical error.

below the costal border. There was puffiness of the lower legs with slight pitting edema, rather less pitting than one would expect for the degree of swelling, if true edema.

The blood pressure was 148/90; the urine was normal; the red count 2.5 million, and the Hgb. 80%.

January 26th. B. M. R. was —34%, pulse 66, weight 69 kg. Electrocardiogram showed normal rhythm, inverted T_1 (—2mm), rate 75.

January 27th. Teleoroentgenogram showed the

started, beginning January 26th. She took gr. ix of Burroughs and Wellcome thyroid daily.

January 29th. Electrocardiogram: T_1 —1mm., rate 85.

January 31st. B. M. R. was —20%, pulse 83, weight 69.5 kg.

February 3d. B. M. R. was —12%, pulse 80, weight 68.0 kg. Electrocardiogram: T_1 +1mm. and slightly diphasic, rate 100.

February 12th. B. M. R. was —4%, pulse 100.

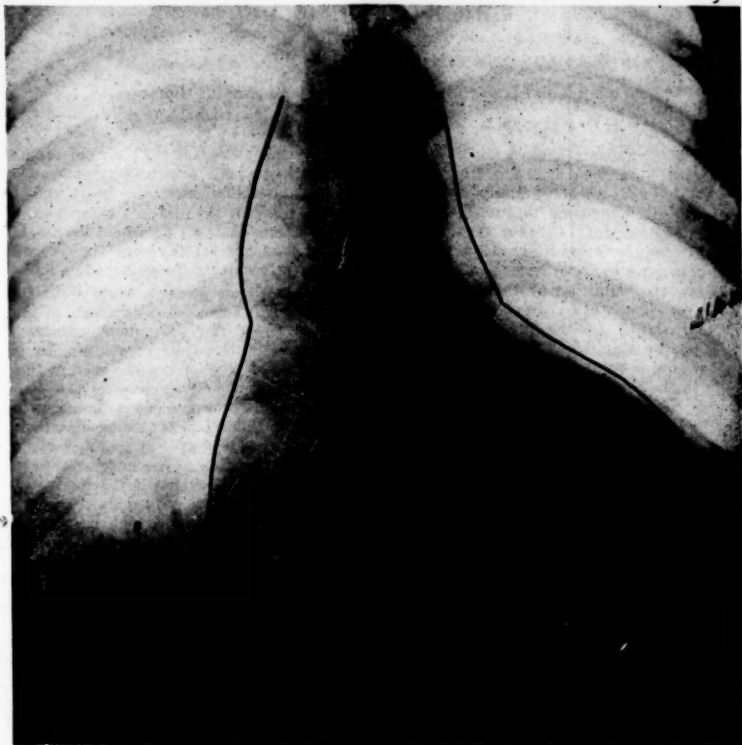


FIG. 1. Teleoroentgenogram, Case 1, before thyroid medication.

heart shadow distinctly enlarged, the greatest increase being to the left in the region of the ventricle. There was also some general enlargement. There was a slight increase in the supracardiac dullness, and the aorta was a little prominent. The appearance was that of hypertrophy of the heart, particularly of the left ventricle. The measurements were

To the left of the median line	9.0 cms.
To the right of the median line	5.0 cms.
Total transverse diameter	14.0 cms.
Length	14.0 cms.
Base	9.5 cms.
Great vessels	6.5 cms.
Internal diameter of chest	23.0 cms.

The diagnosis of myxedema was made and thyroid

weight 66.0 kg. Electrocardiogram: sino-auricular tachycardia, T_1 +1.5mm., rate 130. Teleoroentgenogram showed the size and shape of the heart to have changed remarkably since the first observation. They had come within normal limits. Pulsations were faint and rapid. The measurements were

To the left of median line	7.5 cms.
To the right of median line	4.2 cms.
Total transverse diameter	11.7 cms.
Length	13.0 cms.
Base	11.0 cms.
Great vessels	6.0 cms.
Internal diameter of chest	23.0 cms.

At this time she seemed distinctly improved. She was brighter, her speech was clearer. She was still somewhat fatigued. The increase in pulse rate was

thought to be due to too large a dose of thyroid. It was reduced, therefore, to gr. vi per day, and she was discharged.

February 28th. It was learned that the patient had died the day before at her home in the country. No autopsy was obtained. The local physician reported that for about a week after leaving hospital she seemed very well except that dyspnoea on effort remained. On February 24th she had complained of gas in the stomach and pain between her shoulders.

has not occurred. Willius and Haines dismiss the matter with the statement: "In 162 cases of high-grade myxedema studied, none of heart failure and none of organic cardio-vascular disease was found that could be justly attributed to the myxedema The data presented do not justify the establishment of a cardiac syndrome characteristic of myxedema."

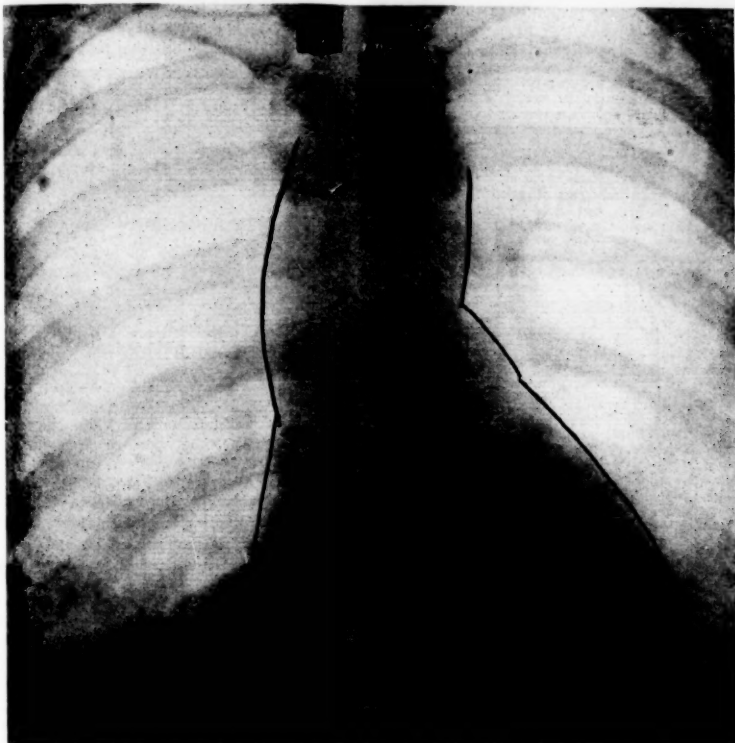


FIG. 2. Teleoroengenogram. Case 1, after thyroid medication.

He had put her to bed and stopped the thyroid. On February 27th she was quite comfortable; no fever, no tachycardia, no edema, lungs clear. Her nurse left her for a few moments, and on returning found her dead in bed.

Fahr's conclusions have been objected to by Christian³ and by Willius and Haines⁴. Christian, in a series of 32 cases of myxedema, found cardiac disturbances of one sort or another in ten, and no suggestion of cardiac lesion in the remainder. None of the ten, however, showing cardiac disturbance resembled the type described by Fahr, which, he says, in his own experience

These results together with our own experience would seem to justify the conclusion that "myxedema heart", in the sense of Zondek and of Fahr, is far from common. On the other hand, we are not prepared to join those who feel that it does not exist. The evidence presented both by Zondek and by Fahr of a marked cardiac dilatation rapidly subsiding under thyroid seems incontrovertible, and our own case in a less striking way is one in point.

In what way the hypothyroid state may be conducive to cardiac damage is an interesting

field for thought. Cardiac damage cannot be blamed to the extra cardiac work, for actually cardiac work is decreased. Field and Bock indeed have shown in two cases of myxedema that the retardation of the minute volume of the circulation even exceeds that in the basal metabolism. The type of disability described by Zondek and by Fahr, too, must be regarded as functional in nature; at least, that portion of the disability that responds to thyroid medication. It seems reasonable to ascribe it in some way directly to the thyroid lack, though why

and perhaps due to it, should be sharply differentiated from that just discussed. That myxedema predisposes to arteriosclerosis has long been recognized, and arteriosclerosis in myxedematous patients may cause cardiac damage just as in non-myxedematous. Christian makes the interesting point that the too free use of thyroid in patients of this kind may not be without danger. Under thyroid medication metabolism rapidly rises to a normal level, and with it blood flow. The work of the heart is rapidly increased, and although this may be of no con-

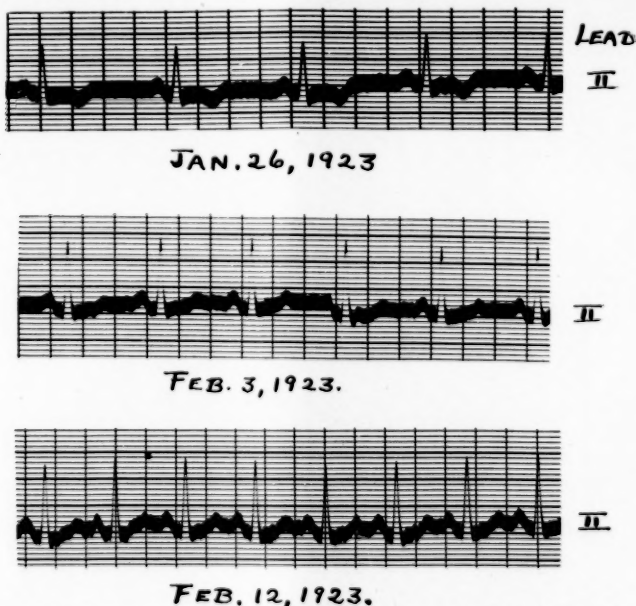


FIG. 3. Electrocardiograms. Case 1. January 26, before thyroid; February 3 and 12, during thyroid administration. Time=0.2 second. Amplitude 1 mm.=10⁻³ volt.

it is not more frequently observed in myxedema remains a mystery. The electrocardiographic changes seen in myxedema, which have recently been discussed by Thacher and White⁸, occur in the Zondek-Fahr types of cardiac dilatation, but also in all other myxedema patients who do not show this phenomenon. They cannot, therefore, be said to be part of the syndrome; and that would leave, therefore, as demonstrative of the so-called "myxedema heart", merely a dilatation involving apparently all free chambers which rapidly disappears under thyroid medication. About all that can be said really is that an occasional myxedema patient presents a type of cardiac flabbiness which is truly due to his low metabolic level.

Organic change in the heart in myxedema,

sequence in an undamaged heart, it may be of serious consequence in the sclerosed one. He recommends in such cases of myxedema as show obvious cardiac damage that thyroid be exhibited very slowly, and that digitalization be effected simultaneously, if necessary. He also comments on the anemia of myxedema which he says may necessitate increased blood flow and heart action *per se*. There is an anemia, no doubt, which may actually increase when thyroid is given, for as Thompson⁹ has shown, the plasma volume is invariably reduced in myxedema, and increases parallel with the B.M.R. when thyroid is given, thus diluting the hemoglobin. However, although theoretically anemia might add to the heart's burden, we are inclined to believe that it is not a very important

factor because such scant data on blood flow¹⁰ as the literature contains, do not indicate much acceleration of blood flow in anemia except in grades far severer than that usually met in myxedema.

Most cases of myxedema will tolerate either a single dose of thyroxin sufficient to bring the B.M.R. to a normal plane, or large doses of thyroxin by mouth to accomplish the same purpose. While we have not infrequently seen thyrotoxic symptoms develop in myxedematous patients as a result of too heavy dosage, they have been, except in the cases reported in the present paper, chiefly palpitation and nervousness. Nevertheless, Christian's warning is worth heeding, and indeed the possible dangers of thyroid medication have been recognized in the Massachusetts General Hospital Thyroid Clinic for several years.

B. ANGINA PECTORIS AND MYXEDEMA

Particularly worthy of notice is the production of angina pectoris by thyroid. As the heart action increases in the myxedematous patient under thyroid medication, so, too, will the need for blood supply to the myocardium. This undoubtedly is forthcoming in the majority of cases, but in those with sclerosis it may not be. Under these circumstances, or because of increase in coronary irritability with the increase in circulation, it is conceivable that attacks of angina pectoris may be a direct result of higher metabolism, just as they are in the uncomplicated case of angina pectoris when the metabolism is raised by muscular effort.

Whether death in Case 1 was due to coronary disease is not known. The patient had gone to her home in the country, and an autopsy could not be obtained. There are, however, several instructive points in the case. In the first place, the rapid reduction in size of the heart under no treatment but thyroid may be interpreted as an evidence of improved tonus. On the other hand, the tachycardia and dyspnoea perhaps should have given warning that all was not well. At the time it was thought they were both the simple expression of a metabolic status rather rapidly restored to the normal level. It seemed hard to believe that the heart was embarrassed when it had just recovered completely from a rather striking dilatation, and when the electrocardiogram showed no conduction defect or unduly low potential. The actual terminal event sounds to us more like coronary occlusion than anything else, and we are led to wonder whether if metabolic restoration under thyroid had been brought about more gradually (perhaps combined with digitalis therapy) the woman's life might have been spared. The lesson can be drawn at any rate, that in the presence of cardiac dilatation in myxedema, or of any other evidence of cardiac abnormality, the use of thyroid

or thyroxin, had best be introduced in a gradual manner.

An instance of a very close relationship between thyroid medication and anginal attacks is furnished by the story of the second patient.

CASE 2. Myxedema and Angina Pectoris.

A business man of 56 was first seen by one of us (J. H. M.) on July 29th, 1920. Six years before he had begun to gain weight, and two years before to get fatigued; he slowed up mentally and had begun to have a puffy face. He also, at that time, began to feel the cold more than previously. In September, 1919, he had been at a sanitarium where his metabolism was found reduced to -25%. Three weeks later after thyroid medication it was -3%. On November 10th, 1919, while taking thyroid, he had a sudden attack of severe substernal pain which came during exercise. The patient thought the thyroid was the cause and it was omitted. The amount of thyroid being taken was gr. x per day.

The patient's appearance on July 29th, 1920, was fairly typical of myxedema. The face was puffy and pasty, the tongue thick, the skin dry; the major symptoms were chilliness, asthenia and imperfect memory. The B. M. R. was -29%, pulse 54, weight 64.5 kg. The diagnosis of myxedema was confirmed, and a comparatively small dose of thyroid, gr. iss per day, was advised.

He was seen next on September 23d, 1920. Through August he had taken thyroid gr. iss per day, as ordered, and then increased on his own responsibility to gr. iii per day. He was much improved, and all the myxedema symptoms had gone. The B. M. R. was +5%, pulse 58, weight 60 kg.

September 26th, 1921. During the preceding year he had been taking thyroid gr. iss every other day only; this because he had not understood directions. He was again somewhat hypothyroid, slightly puffy and retarded. The B. M. R. was -23%, pulse 54, weight 65 kg. Thyroid gr. iii per day were ordered.

October 29th, 1921. Felt normal again as far as myxedema symptoms go, but was having severe twinges of pain in region of the heart on effort. The B. M. R. was -8%, pulse 57, weight 64 kg. Thyroid was reduced to gr. iss daily.

The patient was not seen again until March 24th, 1926, when he returned in response to a letter. He had been taking his thyroid irregularly for the preceding four years, averaging usually not more than six grains per week. He had felt pretty well for the most part. A setting-up exercise each morning had not winded him or given him pain, but he had been having considerable precordial pain on walking, which stopped instantly if he came to rest. He was not chilly and perspired normally, but his face looked puffy, his tongue was thick, and the general appearance definitely that of moderate hypothyroidism. His speech was somewhat thick, but mental retardation was but slight. The heart measurements were within normal limits, the heart sounds slow and regular, rather distant with a faint systolic murmur at the apex. The blood pressure was 120/90; the urine negative; the red count 5.4 million, and the Hgb. 80%. The B. M. R. was -28%, pulse 63, weight 72 kg. Thyroid gr. iii per day was ordered.

April 7, 1926. Had taken the thyroid as directed and felt more alert, but said the attacks of precordial pain came on exertion more easily than before. He still could do his setting-up exercise without trouble. His myxedematous appearance had again gone, and his B. M. R. was -14%, pulse 64, weight 71.4 kg. Electrocardiogram showed rare arrhythmia due to ventricular premature beats with rate of 80. Otherwise the record was normal, the Q, R, S, and T waves being normal in amplitude and duration; there

was no evidence of intraventricular block. Thyroid gr. ii per day were ordered.

In this case there seems to be a clear relationship between the amount of thyroid given and the frequency and severity of the anginal attacks. With no thyroid the patient is myxedematous and free from angina; when sufficient thyroid to bring him to a normal metabolic plane is given, he suffers from angina. It seems fair to conclude that the increased blood flow is directly responsible. For the future it has been decided to maintain his B.M.R. at about —15%, with the hope that he will avoid both pronounced symptoms of myxedema on the one hand, and angina pectoris on the other.

The lesson to be drawn from this case is that the determination of the proper maintenance dose of thyroid in cases of myxedema may have to be adjusted with some nicety. It is by no means simply a matter of bringing such patients to a normal metabolic plane. In many there seems to be a critical level beyond which even a very slight increment in metabolism leads to toxic symptoms. In such patients we may, as in the case just related, have to be content

with maintenance at a somewhat subnormal level, such as —12, —14, or —16% B. M. R.

CONCLUSIONS

In conclusion, we would point out that a lowered tonus of the cardiac muscle in myxedema may, in occasional instances, give rise to definite dilatation of the heart, which dilatation completely disappears under thyroid treatment. We believe that the discovery of such dilatation, or of evidence of any other sort of cardiac disturbance like angina pectoris is a direct indication for very gradual thyroidization. With patients who under thyroid medication develop toxic symptoms, whether angina pectoris, or other, one must be content with maintenance at a metabolic level below that at which the toxic symptoms occur.

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A CASE OF SO-CALLED INFLUENZAL PNEUMONIA*

BY CHANNING FROTHINGHAM, M.D.

It is interesting to speculate whether the epidemic disease called influenza which swept through this country in the latter part of the year 1918 and early in 1919 is always with us in isolated cases and mild epidemics. Unfortunately, no definite diagnostic features are known which permit one to decide whether a febrile upset with involvement of the upper respiratory tract and no other localization is or is not this epidemic disease in isolated cases. Those who believe that the influenza bacillus was the cause of this epidemic may take exception to this statement, but it seems fair to say that at the present time it has not been proved that this organism caused the epidemic. If, however, the epidemic disease called influenza extends into the lungs the roentgenologists claim that the appearance and progress of the disease in the chest may be characteristic even in the presence of complicating organisms. For it seems quite evident that the disease spoken of by Selby¹ in 1919 as Hemorrhagic Pneumonitis is this same epidemic disease with pulmonary invasion and probably with other organisms present in the lungs producing complications. Furthermore, it is possible to decide from autopsy if the epidemic disease is present because of certain definite lesions in the lungs which have been described by different workers² as

peculiar to this epidemic disease when it invades the lungs. These characteristic findings in the lungs may be detected in the presence of superimposed infections with the pneumococcus, influenza bacillus, streptococcus, etc.

It seems worth while, therefore, to report isolated cases of this epidemic disease when their identity has been definitely established in order to add to our knowledge of this disease and its prevalence, with the hope that eventually it may be recognizable clinically, not only in its milder forms without pulmonary invasion, but also when the lungs are involved and complicating organisms present. A more suitable name than influenza should be given this epidemic disease if eventually it turns out that the influenza bacillus is not the etiologic agent, in order to withdraw one more disease from that indefinite group spoken of so loosely as influenza or gripe.

At autopsy the presence of this epidemic disease may be suspected upon gross inspection of the lungs by the bloody fluid which exudes in excess from the cut surfaces and the dilatation of the alveolar spaces. This suspicion may be confirmed upon looking at the sections under the microscope where the dilatation of the alveolar spaces can be proved and the presence of the peculiar hyaline membrane in the alveolar spaces detected. In addition the exudate into the alveolar spaces will be found to consist of

*From the Medical Clinic of the Peter Bent Brigham Hospital and the Department of Medicine of Harvard University.

blood cells and coagulated serum without much fibrin. Just how much leucocytic reaction will result from the lesion produced by the virus of the epidemic disease is unknown because in all fatal cases one or more complicating organisms are present. It must be remembered that the gross and microscopic picture in the lungs may be markedly influenced by the complicating organisms but the hyaline membrane and dilated air spaces can still be found under the microscope in the presence of other lesions. It also should be remembered that the influenza bacillus produces a characteristic bronchopneumonia and a peribronchitis which are quite different from the lesion described above as typical of this epidemic disease and should not be confused with it.

The features in the roentgen ray examination which are peculiar to this disease are that both lungs are involved, that the process starts about the hilus and extends towards the periphery, that there is often a clear zone about the periphery, and finally, that the clouding is blotchy with patches of fairly clear lung amid the involved areas. Just how much of the roentgen ray findings are due to the lesion produced by the virus of the epidemic disease is not established. Also it must be remembered that the complicating organisms may produce so much change in the lungs that the characteristic roentgen ray picture is obliterated.

In November, 1925, a patient came to autopsy at the Peter Bent Brigham Hospital in whose lungs were found these lesions peculiar to this epidemic disease. It is interesting to note that the roentgenologist reported that the x-ray of the lungs suggested the "influenzal" type of pneumonia. This patient began his illness in a community, Petersham, Mass., in which the local physician saw a few other cases which he thought might be the epidemic disease. The health authorities to whom he reported his suspicions doubted the presence of the epidemic disease, because there was no appreciable amount of pneumonia being reported from that neighborhood, as they thought would be the case if the epidemic disease were present. This patient with the pneumonia left the town of Petersham and came to Boston before the lung complications developed, so that his case was not reported to the health authorities from there. The incident suggests that there might have been a little focus of this epidemic disease in Petersham in which group one case developed pulmonary complications. It at least shows that this epidemic disease may be present without an appreciable epidemic. This case further strengthens the belief that the influenza bacillus is not the etiologic agent because, as will be seen below, not only were no influenza organisms found by culture but also the usual lesions in the lung attributed to the influenza bacillus were absent.

This patient, G. F. B., medical number 26781, Peter Bent Brigham Hospital, was a man 38 years old, who entered the hospital on November 4, 1925, with a complaint of "breathlessness". He was a chauffeur and owned and operated his own taxi, spending the winters in the south and renting his car for the whole summer to one party. His family and marital history were essentially negative. No exposure to industrial hazards. His habits were apparently excellent. He was born in Petersham, Massachusetts, and lived there all his life except for winters in the South. He had mumps and measles in childhood. Adenoids removed at 12 years. At 19 years of age he had rheumatic pains in upper right arm while washing cars at night. No fever or joint disturbance. These muscular pains have recurred in the winter time, which is one of his reasons for going south. At the age of 20 he had an abscess opened and drained in left leg. At 23 years gonorrhea. At 31 he had "influenza" mildly; this was the time of the universal epidemic. At 36 he had pneumonia twice within 5 months and one of the attacks was associated with a severe pleurisy. At 36 he had for six weeks a period of frequency of urination without nocturia and this frequency was associated with urgency so that he could not hold the urine when the desire to pass it came. In 1917 when 30 years old a lesion was found in his heart by the U. S. Army doctors and after 30 days observation he was sent home. No cause for this cardiac lesion can be found in the history. Before this lesion was discovered he had played basketball frequently without symptoms. With colds he often had a purulent discharge from the left ear. He had so-called intestinal gripe 8 months ago associated with diarrhea. His present illness began on October 30, 1925. At that time he complained of pain in the back for which he consulted his local physician in Petersham. A few days previous he had done some lifting of heavy objects and the local physician, finding no fever, looked upon the symptoms as due to muscular strain and advised him to go to Boston as he had planned. He was seen 3 days later on November 2 by his family physician in Brookline, at which time he still complained of backache and also breathlessness. In addition he had a cold and cough and was feverish. His physician advised him to go home and go to bed. When he saw him at his home 2 days later, November 4, it was obvious that there were pulmonary complications. At that time he had substernal pain made worse on coughing. His physician sent him into the Peter Bent Brigham Hospital. He vomited once 2 days before entry but otherwise had no symptoms pointing towards the gastro-intestinal tract. He also had no symptoms pointing towards the genito-urinary tract.

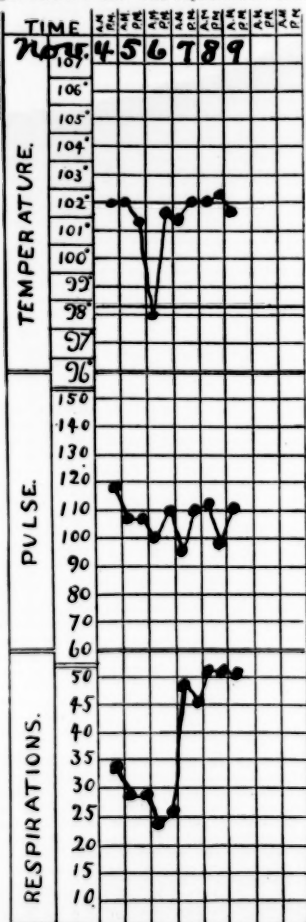
Upon physical examination there was found a well developed and nourished man with pale color to the skin and cyanosis to the lips. He was mentally clear. He was lying propped up in bed with considerable respiratory distress and breathing rapidly. There was an anxious expression to the face. The skin was pale, dry and warm. The pupils were equal in size, regular in outline and reacted to light and accommodation. Ophthalmoscopic examination showed in the right eye a cornea free from opacities, clear media and the disc well outlined. A dark area covered all of this disc except for a narrow rim at the periphery. The arteries and veins appeared essentially normal and there was no exudate or hemorrhage seen. In the left eye there were no corneal opacities, the media were clear and the disc well outlined with normal cupping. The blood vessels were normal in appearance and there was no exudate or hemorrhages. The remaining teeth were in bad condition, many goldcapped, and the gums showed pyorrhea. Otherwise the mouth and throat were essentially negative. There was no enlargement of the thyroid or general glandular enlargement, or

masses in the neck. The thorax was symmetrical. The breathing was shallow, rapid and labored. The heart showed a diffuse impulse at the apex region which was most pronounced in the 6th space 14 cm. to the left of the midsternal line. The left border of dullness was 15 cm. from the midsternal line and the right border 5 cm. The supracardiac dullness in

the chest and over the upper part of the back and somewhat in the axilla. No bronchial breathing was heard but the rales indicated an inflammatory exudate into the lung tissue. Over the left lung nothing abnormal was heard.

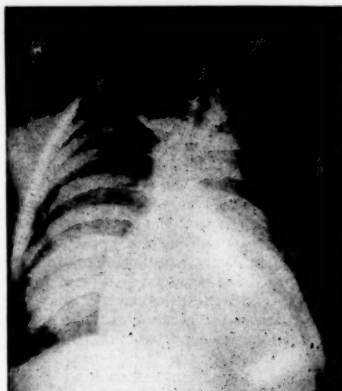
The abdomen, genitalia, and extremities were essentially negative. No gross disturbances in the reflexes were made out.

The clinical pathology showed hemoglobin 85%; R. B. C. 4,200,000; W. B. C. varied from 8,600 to 14,100. The stained specimen of the blood was essentially negative and showed 79% of polymorphonuclear neutrophils. In the urine there was no albumin or sugar and in the sediment no blood cells or casts and only an occasional leucocyte. Later in the course of the illness a few red blood cells and hyaline casts appeared. The stools were normal. The blood culture showed no growth. The Wassermann reaction in the blood serum was negative. The sputum was blood tinged and showed a few diplococci which were gram positive, many strep-



the 1st space was 4 cm. and in 2nd space 8 cm. The action of the heart was regular except for what appeared to be an occasional premature ventricular systole. There was a systolic thrill felt in the apex region and all over the precordia there was heard a loud systolic murmur. No diastolic murmurs were made out. The blood pressure was 95 systolic and 55 diastolic.

In the right lung there was some relative dullness in the upper part both front and back. There were many fine crackling rales heard over the front of



X-RAY OF CHEST

Right lung presents clear periphery, and some less dense areas scattered throughout the involved area.

Left lung presents smaller amount of same process starting at the hilus.

tococci and staphylococci but no acid fast organisms. The peritoneal washings from a mouse killed 8 hours after injection with 0.5 c.c. of fresh sputum showed considerable pus. Microscopically there were a very few gram positive diplococci. The washings were bile soluble but did not show flocculation with either the precipitin method or agglutination test. The diplococci were considered therefore to belong to the type IV pneumococcus group.

The accompanying chart shows the record of the temperature, pulse, and respiration during the course of his stay in the hospital.

The report by Dr. M. C. Sosman upon the examination of the chest by means of the roentgen ray from a picture taken while the patient was in bed reads: "Marked consolidation of the right lung, particularly around the hilus and not involving the apex, the base, or the extreme periphery. This suggests the influenzal type of pneumonia. The left upper lobe appeared mottled, suggesting a bronchopneumonia. The possibility of tuberculosis should be considered."

The opinion was formed that the patient had chronic cardiac valvular disease with aortic stenosis.

some type of pneumonia, and the possibility of tuberculosis.

During the five days in the hospital the signs of pulmonary infiltration in the right chest became more pronounced but the outstanding features were the difficulty in breathing and the precordial discomfort. There was also considerable abdominal distension. He finally died without any additional diagnoses being made.

An autopsy was performed in the Pathological laboratory of the Peter Bent Brigham Hospital (No. A-25-110) and I am indebted to Dr. S. Hurt Wollbach for the opportunity to use the records and material and also for his assistance in studying the tissues.

GROSS EXAMINATION

Numerous reddish brown, slightly crusted petechial spots were present on the lips. Marked pyorrhea of the lower gums existed. There was a depressed scar over the tip of the coccyx. A few copper colored macules were scattered over the skin of the back. In the peritoneal cavity there were some old adhesions around the appendix and gall bladder.

The right pleural cavity contained 300 c.c. of clear dark colored fluid with a few fairly recent adhesions binding the pleura to the chest wall.

Pericardial cavity contained 75 c.c. of clear straw colored fluid. There were a few petechial spots on the visceral pericardial surface.

The heart was enlarged, weighing 620 gms., and presented greatly distended auricles. There was slight thickening of the mitral valve. On the aortic valve there was a large, warty, calcified vegetation, which bound two of the cusps together and produced stenosis. Another smaller old fibrosed vegetation was present on the opposite cusp. There was some induration of surrounding tissues. The pulmonary and tricuspid valves were normal.

The right lung weighed 880 gms., the left 440 gms.

The right lung was reddish gray in color, shading to deep purple in the dependent portions. The middle and lower lobes were practically non-crepitant and very firm to palpation. The upper lobe was somewhat reduced in crepitanity. On section of the right middle and lower lobes the surfaces are reddish, gray and uniform in appearance. A large quantity of slightly blood tinged frothy fluid material exuded from the alveoli. This fluid was slightly sticky. There was slight variation in the deepness of the color as the gray areas in spots were more pronounced and gradually shaded into the redder portions. The right upper lobe showed a few confluent patches of increased density but otherwise was not remarkable.

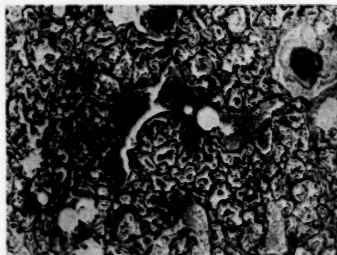
The left lung presented on the cut surface a few grayish white confluent areas which were slightly firmer than the surrounding tissues.

The spleen was essentially negative. The gastrointestinal tract was essentially normal except for a small duodenal ulcer. The pancreas was normal in appearance. The liver showed some thickening of the capsule in places with extension of scar tissue from these areas into the liver substance. The cut surface of the liver showed mottling with different shades of reddish brown color and an occasional small yellowish spot. The wall of the gall bladder showed some thickened areas but the mucosa seemed normal and there were no stones within. Except for one small area typical of infarction the kidneys were normal in appearance. The adrenals, urinary bladder, prostate and genitalia were not remarkable. The aorta showed good elasticity and contained only a few atheromatous plaques.

MICROSCOPIC EXAMINATION

The cardiac muscle was essentially normal. The lungs were especially interesting. In some areas the alveoli were dilated so that they showed definite

emphysema. In some of these dilated alveoli there was a definite hyaline membrane which was not attached to the wall but roughly followed the outline of the air space and was situated near to the alveolar walls. In others there was more or less fibrin. In these parts of the lung there was some degeneration of the cells lining the air spaces and some hemorrhage into the air spaces and some coagulated granular material. The leucocytic reaction in many of these areas was slight. In some of these areas definite organization of this membrane or of fibrin was going on so that tufts of organizing tissue would fill the alveolar space. In other parts of the lung there was more of cellular reaction in the air space so that they showed the typical picture of a bronchopneumonia with leucocytic exudate in the smaller bronchi and the alveolar spaces. The dilated air spaces with the hyaline membrane, congestion, and in some instances, hemorrhage, with only slight leucocytic infiltration is the typical picture produced in the lung by the virus of the epidemic disease called influenza. In addition, there was evidence of a bronchopneumonia such as may be produced by various organisms, but not the peribronchitis which was produced in the big epidemic by the influenza bacillus. A careful search was made, after special staining, of the areas in which only the peculiar lesion believed to be due to the virus of the epidemic disease was present and failed to show any bacteria. Also in the areas of bronchopneumonia with leucocytic infiltration no organisms were found. The accompanying picture shows the lesion presumed to be typical of this epidemic disease.



Section of the lung showing the dilated alveolar spaces, the hyaline membrane, the coagulated material in the alveolar spaces, and in some instances slight leucocytic reaction in the alveolar spaces.

The spleen showed an increase in the proportion of the pulp to the framework and the hyaline like changes in the walls of the arteries which are so frequently found. In the liver there was definite evidence of central necrosis in the early stages without appreciable pronounced reaction. In the kidney the structures appeared normal except for an occasional fibrosed glomerulus and the infarcted area described above which showed old scarring. In the pancreas the capillaries in the islands were in places so engorged with blood that they suggested hemorrhage into the islands and in one place the pancreatic duct was distended with an eosin staining homogenous mass. The duodenum showed the ulcerated area described above which was not remarkable. In the adrenals there were some areas in the medulla of round cell infiltration but the cortex on the whole was essentially negative.

The cultures from the heart's blood after death, like the cultures from the blood during life, remained sterile. From the lungs cultures showed a growth of staphylococcus and non-hemolytic streptococcus.

The autopsy findings in the lungs in this case confirmed the suspicions aroused by the x-ray report that it was so called influenzal pneumonia. The cultures from the lungs suggested that the disease, as usual in fatal cases, was complicated by other organisms, although these could not be demonstrated in the sections of the lungs. The absence of influenza bacilli in the sections, the failure to grow them in cultures from the lungs, and the absence of the characteristic peribronchitis upon microscopic study of the lungs all lend weight to the view that the influenza bacillus is not the cause of this epidemic disease.

This case calls attention to the fact that this

epidemic disease may be present in a community without a pronounced epidemic. Whether this was an isolated case or was associated with the other milder cases of illness in 'Petersham to form a small group of this epidemic disease cannot be established.

This case also emphasized the fact that the presence of the epidemic disease may be diagnosed by the roentgen ray examination if the lungs are involved.

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IODIZED OIL AS AN AID IN THE DIAGNOSIS OF CHRONIC SINUSITIS AND OF MAXILLARY CYSTS*

BY PAUL B. MACCREADY, M.D.

The introduction of iodized oil by Forestier and Sicard in 1921 was a distinct advance in the roentgenographic study of the body cavities. While first employed by them in demonstrating obstructions of the spinal canal and in outlining fistulous tracts and cavities of the bronchial tree and pulmonary tissues it was subsequently used in the lacrimal passages, digestive tube and in cold abscesses. Later, Neuswanger found it to be an excellent pyelographic medium contrary to the prediction of its originators. In the bronchial and pulmonary tissues it has been used with marked success not only as an opaque medium for roentgenographic study but also as a therapeutic agent.

Iodized oil as used by these observers is the chemical compound of 40% metallic iodine with oil of poppy seeds. When of clear amber color free iodine is not present. Its high iodine content renders it opaque to the roentgen rays. Its advantages over the solutions of iodized salts, which were formerly used, lie in its low toxicity and tolerance by the body tissues and the slow rate of absorption of the contained iodine.

Opaque salts such as potassium iodid and barium sulphate have been used in the roentgenographic study of the antrum. In view of the tremendous advantages of iodized oil over the opaque salts, it was felt it could be used to advantage in the paranasal sinuses. Its use is not restricted to the maxillary antrum. I have used it during the past winter in numerous cases of chronic sinusitis without having any untoward results. It has only been used in those cases in which the usual methods of diagnosis were not sufficient and from the help it gives it will take its place as one of the most important methods of diagnosis available.

*From the Department of Surgery, Yale University School of Medicine. Read before the Connecticut State Medical Society meeting, May, 1926.

METHOD OF INJECTION

For use in the paranasal sinuses a 10% solution of the iodized oil has been found to be much better than the 40% solution as the latter is so opaque as to obscure many of the other features of the sinuses. The solution used was "Iodipin" 10% (Merck). When exposed to the light or air it becomes brown because of the liberation of iodine. It should not be used when brown though this is not as imperative in the sinuses as in the other body cavities since it is removed so quickly.

For injection into the antrum, a trocar is inserted and the antrum is irrigated with sterile normal saline solution as in the usual manner, in order to wash out any free pus. Care should be taken that all the saline solution is removed as the iodized oil is insoluble in water. Several cubic centimeters (approximately 5 cc.) of 10% iodipin are injected into the antrum through the trocar using a small rubber bulb such as an ear syringe. The exact amount gotten into the antrum cannot be determined and is unimportant if the patient remains upright because of the great variations in the size of the antrum. X-rays are made as soon as possible after the injection. Stereoscopic views are made in the antero-posterior and lateral positions.

For injection into the frontal and sphenoidal sinuses a small silver catheter is used in place of the trocar and similar technique carried out. Usually catheterization of these sinuses can only be done after a part of the middle turbinate has been removed. The ethmoid sinuses cannot be injected but much can be learned from the course of the iodized oil in the nose as it passes back into the nasopharynx. Normally the cilia carry it back into the nasopharynx very rapidly and in definitely established currents.

CASE REPORTS

Chronic Sinusitis Maxillary Antrum—J. D., white man, aged 30, whose chief complaint was a foul discharge from the left nostril and a bad odor to the breath. This had come on insidiously and had been present for six or seven months. There had never been any headache, nor loss of sense of smell nor trouble with vision. There had been a marked loss of appetite, apparently the result of the foul discharge. The patient was not susceptible to colds. X-rays made at this time showed clouding of the left antrum with very tiny frontal sinuses. Shortly afterward, I saw the patient. Transillumination showed a clouding of the left antrum while the right antrum was clear. Examination of the nose showed no evidence of pus even after using suction. There was good breathing space and the middle turbinate was not close to the lateral wall of the nose. There was no polypoid tissue or hyperemia of the mucous membrane in the region of the ethmoids.

Two months later the patient presented himself again. The examination showed the same condition and with no evidence of pus, though subjectively the patient stated that he still had the foul post-nasal discharge. In view of this, the left antrum was irrigated and the fluid returned clear. The patient was seen on numerous occasions and always with the same complaint. Several different nasal douches were used, all to no purpose. The teeth were gone over carefully and put in good condition. None of the upper teeth on the left side were at fault, however.

Eight months after the patient was first seen he returned again, still complaining of the foul discharge. No discharge could be seen in any part of the nose. During the nasopharyngoscopic examination this time it was noted that the posterior end of the middle turbinate was slightly polypoid. As this was different from the previous examination the left antrum was irrigated and a small amount of pus washed out. Two subsequent irrigations in the next two weeks also gave a few small flakes of foul smelling pus.



FIG. 1. Antero-posterior view of sinuses in patient with chronic infection of the left antrum. Note that the iodized oil fills only the center of the antrum. The distance between the oil and the antral wall indicates the amount of thickening of the lining membrane.

At this stage several cc. of 10% iodipin were injected into the antrum after irrigation. X-rays, Figs. 1 and 2, lateral and antero-posterior, were made of the paranasal sinuses with the patient in a sitting position. The iodipin occupied only a small portion of the center of the antrum, indicating marked thickening of the whole lining membrane. Furthermore, it passed normally into the nasopharynx as one would expect when the ethmoids were not involved. It

could not be expected that repeated irrigations would clear up this condition, so an operation was decided upon.

A radical antrum operation (modified Caldwell-Luc) was done on the patient under gas anesthesia. On opening into the antrum, bleeding was controlled by suction, so that a good view could be obtained before the membrane was disturbed. It was seen that the whole antrum was lined with polypoid mucous membrane about one-fourth inch in thickness.

Microscopic section of this showed a very pronounced plasma cell infiltration, as is usually the case in a chronic sinus infection. Cultures of the pus were taken from the antrum and showed a pneumococcus which unfortunately was not typed. One month after the operation there was still a slight discharge, as one would expect for a while after such



FIG. 2. Lateral view of sinuses in same patient as Fig. 1. The passage of droplets of iodized oil through the antral orifice and into the nasopharynx follows the same course as in a normal person.

an operation, but it was no longer foul. Two months after the operation the discharge had entirely disappeared.

Maxillary Cyst—K. C., white girl, aged 25, referred by a dentist with the history that four months previously the right upper first bicuspid tooth had been extracted. One month later she developed slight swelling of the cheek. A swelling the size of a cherry could be felt in the canine fossa on the right. This swelling was aspirated and clear fluid obtained. No cultures were made. There was no pain or headache. Shortly after this the patient developed gripe. Following this she developed a right-sided headache and noticed a foul discharge and odor in her mouth. On examination there was no swelling of the cheek and no swelling in the canine fossa. X-rays of the teeth and of the paranasal sinuses showed nothing definite. Both antra were clear on transillumination. No discharge could be seen in the right nostril after careful shrinking. A probe could be passed through the bicuspid socket for a distance of one and one-half inches, going upward posteriorly and apparently into the antrum. The right antrum was irrigated and the fluid returned clear. Then a small catheter was inserted through the tooth socket and a moderate amount of foul pus washed out.

At this stage a small amount of 10% iodipin was injected through the tooth socket and X-rays were made with the patient in an upright position. The X-ray, Fig. 3, showed a small cyst just below the floor of the antrum.

The cyst was removed under gas anesthesia. The bone over the cyst was very thin. On opening into the cyst it appeared to be lined with a smooth, pale, homogeneous lining. On curetting this out it ap-

peared to be one-eighth of an inch in thickness. It was regular and smooth in every part and at no place was there exuberant granulation tissue.

The history, X-ray and operative findings suggested a dental cyst of the so-called infectious type as described by New. These cysts are quite different from dentigerous cysts and are supposed to be the result of irritation by infection, and pathological examinations have not shown them to be lined with epithelium. In the present case, microscopical sections showed that most of the lining was made of granulation tissue. However, one section showed very definite epithelium. The interpretation would be that most of the epithelium had been destroyed by infection. Healing of the cyst by means of granulation tissue did not take place because of the persistence of some of the epithelium.

COMMENT

Sinusitis is a mucous membrane infection and not an osteomyelitis. With the subsidence of an acute infection the mucous membrane returns to normal. In chronic sinusitis the mucous membrane is thickened either as the result of

all sinus symptoms have subsided. Hence, in view of the absence of visible pus or of polypoid tissue in the nose, the X-ray finding in this patient was not of much help. The use of the X-ray after the injection of iodipin indicated a thickening of the whole lining of the antrum of such proportions that only an operation would clear up the condition. This saved the patient the discomfort and long disability of repeated irrigations which are usually done before any operative interference is attempted.

While it is a good rule to have the teeth X-rayed in every case of chronic antrum infection, a diagnosis of chronic sinusitis secondary to a tooth infection, can often be made on the basis of localized thickening of the membrane in the floor of the antrum. This is one of the reasons why the X-rays should always be made with the patient in an upright position. Likewise, localized thickening of the lining membrane in the nasal wall of the antrum indicates the ethmoids as the primary seat of the infection. Antral polyps are readily demonstrated by the use of iodized oil so that one does not have to depend upon such fallacious methods as the sensation of the trocar or the difficulty in forcing air through the trocar.

The second case illustrates a differential diagnosis which must frequently be made by a laryngologist. Opening into the antrum after a tooth extraction with its resulting sinus infection is a common occurrence. Usually the diagnosis of a sinusitis is obvious and all too frequently by the time the patient is seen by the laryngologist an osteomyelitis of the maxillary bone is present. Occasionally, dental cysts only become apparent after the extraction of a tooth. While many of these cysts become sufficiently large to encroach upon the antrum, it is essential to differentiate them as the treatment is quite different. The iodized oil can be used for the diagnosis of all types of maxillary cysts and has the advantage that it does not need to be removed afterwards.

The treatment of chronic frontal sinusitis is quite different from that of chronic antrum infection due to the mechanical differences in drainage. Many cases of frontal sinus infection clear up with the opening of the anterior ethmoids and the establishment of drainage through the frontal nasal duct. Hence, iodized oil should be reserved for those patients who do not clear up under this conservative form of treatment. In sphenoid infections iodized oil is not especially practical as direct inspection is almost as easily performed as catheterization.

There are many sources of error in the interpretation of plates unless stereoscopic views are made. As soon as the iodipin is injected into the sinus the ciliary currents start to remove it. In the antrum it is removed first from the lateral and orbital regions. In a flat plate this makes an irregular outline which may sug-



FIG. 2. Lateral view of sinus in patient with a maxillary cyst. The iodized oil gives a graphic representation of the cyst and shows that there is no connection with the antrum.

round cell infiltration or of myxomatous-like degeneration. Often tiny abscesses can be seen deep down in the membrane on microscopic section. Frequently the persistence of infection produces a polypoid degeneration or even polyps. *It is this thickening of the lining membrane of the sinuses which gives the diagnosis of an existing sinusitis.* Its presence is readily demonstrated by the X-ray through the use of an opaque medium such as iodized oil.

In many cases of chronic sinusitis, the diagnosis is very easy. Iodized oil has only been used in those cases where the diagnosis was difficult so that a statistical study is not presented at this time. The first case of maxillary sinusitis was an exceedingly difficult case to diagnose. Frequently an acute sinusitis will produce changes which persist in the X-ray months after

gest polyps. Where the middle turbinate has been removed or the ciliated epithelium otherwise destroyed the iodized oil will remain in the nose until forcibly removed (blowing) where normally it can be traced as tiny droplets passing back to the nasopharynx.

The iodized oil remains in a sinus for a variable period. For example in the antrum, traces of it can usually be found at the end of twenty-four hours. This is especially true if the antrum is diseased. Removal from the frontal sinus is much quicker than from the antrum. *Little therapeutic effect can ever be expected from the use of iodized oil as it is removed from the sinuses too rapidly.*

There is very little discomfort following the use of iodized oil in the sinuses. A small amount

of the oil is absorbed by the lymphates so that there may be a feeling of congestion of the cervical glands for a short period.

CONCLUSIONS

1. Iodized oil will show the amount of polypoid degeneration and thickening of the mucous membrane of the sinuses and in that way indicate the existence of a chronic infection.

2. Iodized oil is entirely free from untoward effects when used as an opaque medium in the roentgenographic study of the paranasal sinuses.

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OBSTETRICS IN THE GENERAL HOSPITAL

Analysis of 2404 Consecutive Obstetric Cases at the Goddard Hospital

BY HARRISON A. CHASE, M.D.

THERE has been considerable doubt expressed by certain obstetric authorities as to whether or not a general hospital was a suitable place for the care of the pregnant woman during confinement. In considering this question, I have made the following analysis concerning 2404 consecutive deliveries and 85 abortions—con-

sections and other laparotomies were performed by the general surgeons of the Staff, usually after consultation. Other obstetric operations were performed by the attending physicians.

The deliveries include 1176 primiparae and 1228 multiparae, and represent 2320 vertex, 65 breech, 3 face, 3 brow and 11 transverse presentations. The following table shows the meth-

TABLE 1
METHODS OF DELIVERY
MATERNAL AND FETAL DEATHS OCCURRING WITH EACH

		Labors		Fetal deaths	Maternal deaths
		Primiparae	Multiparae		
Normal labor.....	1616			62 (4%)	3 (.18%)
Low forceps.....	401	327	74	12 (3%)	1 (.25%)
Mid forceps.....	203	153	50	12 (5.9%)	0
High forceps.....	55	27	28	6 (10.9%)	1 (1.8%)
Version.....	24	7	17	7 (29%)	0
Cesarian section.....	35	11	24	0	0
Destructive operations.....	5	2	3	5	0
Breech delivery.....	65	37	28	9 (13.8%)	0
Operative labor.....	791			56 (7%)	2 (.25%)
Total labors.....	2404	1176	1228	118 (4.9%)	5 (.2%)
Abortions					
Total abortions.....	85	Induced	18	(1 maternal death)	
		Accidental	67	(1 maternal death)	
Total maternal deaths (including abortions) 7 (.28%)					

situating the obstetric service at the Goddard Hospital during the years 1919 to 1925, inclusive. These were private cases of the individual members of the Staff, and represent the effort of men doing considerable general medical practice, to apply accepted obstetric methods to the maternity work. The cesarian

ods of delivery employed and the number and percentage of maternal and fetal deaths occurring with each method. Fetal death here includes stillbirths and babies dying during the first two weeks of life, and requires a pregnancy duration of six months to distinguish it from an abortion.

TABLE 2

MATERNAL DEATHS

1. Para III Normal delivery, influenza in puerperium, with sudden death from embolus.
2. Para I Severe pyelonephritis at fifth month. Spontaneous abortion followed by sudden death from embolus four hours after abortion.
3. Para I Congenital heart disease with secondary polycythemia and cerebral thrombosis. Normal delivery with death later from cerebral condition.
4. Para I Eclampsia referred after several convulsions. Induction of labor. High forceps at full dilatation. Continued convulsions and coma until death.
5. Para I Severe prolonged vomiting of pregnancy. Abortion induced. Death from infection.
6. Para II Toxemia of pregnancy. Complete separation of placenta with marked shock. Bag dilatation and normal delivery. Death from subsequent puerperal infection.
7. Para I Easy low forceps delivery after 22 hours labor. No perineal tear. Chill and high fever 24 hours after delivery. Rapid development of peritonitis and death on the seventh day. Autopsy showed septicemia with streptococcus hemolyticus, acute endometritis, right salpingitis and general peritonitis.

TABLE 3

STILLBIRTHS

Traumatism from delivery	12	Normal labor (unknown cause)	6
Toxemia	10	Eclampsia	6
Abruptio placenta	10	Fetal abnormalities	6
Macerated fetus	8	Hydranmios	2
Prolapsed cord	7	Maternal hyperthyroidism	1

TABLE 4

FETAL DEATHS

Prematurity	21	Impetigo	2
Birth trauma	12	Prolapsed cord	1
Fetal abnormality	8	Cause unknown	2
Inanition	3	Umbilical sepsis	1

MATERNAL DEATHS

Of the 7 maternal deaths, Nos. 1 and 2 may show the possible role of pre-existent infection in the causation of embolism, No. 3 was entirely medical in character with inevitable death, No. 4, shows the severe form of eclampsia in which probably no treatment would have prevented death, Nos. 5, 6 and 7 are sepsis deaths, and show the great danger of infection in toxemia and in debility from prolonged starvation, also the possibility of severe infection in the uncomplicated delivery. These results show the general trend of obstetric deaths with sepsis, toxemia and embolus as the chief causes.

FETAL DEATHS

There have been 68 stillbirths and 50 babies dying during the first two weeks of life, a total fetal death rate of 4.9%. Among these the number of deaths from prematurity was augmented by the fact that many of these premature were also from toxic mothers and might be classified under the head of toxemia. The toxemia deaths occurred usually while the mother was undergoing medical treatment. Premature separation of the placenta shows itself as extremely dangerous to the fetus as well as the mother. In the macerated fetus group neither syphilis nor toxemia could be given as a cause, and here the etiology is obscure. Prolapsed cord shows the usual high fetal mortality. The impetigo deaths occurred during an epidemic; with better methods of managing the first mild cases of an epidemic, these severe cases in the future may be eliminated.

TECHNIQUE OF LABOR

Rectal and abdominal examinations only have been made as long as labor proceeded normally but suspicion of abnormality of labor has always demanded vaginal examination.

Fetal heart observations have been made as a routine by our nurses at very frequent intervals, especially in the second stage, and all variations promptly reported.

Morphine alone or with hyoscine has been most useful in preserving strength and morale during the first stage, especially in primiparae. Nitrous oxide in the second stage was fairly successful but during the past year this method has been superseded by the combination of morphine and rectal ether, following the Gwathmey technique without the magnesium sulphate. A moderate amount of fetal apnoea has occurred with this method but in none has any harmful result occurred and we have found the treatment very effectual. Light surgical ether has been used for all operative deliveries.

In the placental stage we have avoided early efforts at expelling the placenta but have used 5 minim doses of pituitrin if bleeding or undue relaxation were present. Where expression has failed inside of 1 to 2 hours, and where severe hemorrhage has occurred, manual extraction under light ether has been performed.

Perineorrhaphy has been performed during the third stage on all tears regardless of extent, using No. 2 chromic catgut for skin, muscle and fascia and endeavoring to approximate each layer of tissue. In complete tears immediate repair has given good results, although in some there has occurred a superficial lack of union.

Immediate trachelorrhaphy has been performed in all severe tears of the cervix, providing the mother's condition was satisfactory. This has been much easier when done after expulsion

of the placenta. In all cases, a certain amount of union has occurred, and in a majority the result has been satisfactory when inspected at the examination six weeks after delivery.

Episiotomy of the oblique lateral type has been done frequently in primiparae, both to prevent fetal injury from pressure and to avoid severe third degree tears. We have not used the operation as a routine measure.

Bag dilatation during labor has been used occasionally in poorly dilating cervixes with premature rupture of the membranes. In vertex presentation with the head in the pelvis this use has been limited on account of the danger of displacing the head with resulting malposition or prolapsed cord. In dry breech and transverse labors, we have not feared such displacement and have used the bag freely, always with good effect.

FORCEPS DELIVERIES

Low forceps deliveries have been done whenever there was delay at the perineum, unrelieved by episiotomy, and whenever the baby showed the slightest sign of danger from prolongation of natural labor. Full ether anesthesia has been maintained during the perineal dilatation until the forceps blades were applied; whereupon anesthesia has been gradually withdrawn during extraction.

The indication for mid forceps extraction has been more difficult of determination and has generally depended upon the decision that the baby was in danger from further labor, or that further waiting tended to make safe delivery more difficult. Careful estimate of the mother's physical and nervous strength and a critical survey of the progress of labor as to the strength and frequency of uterine contractions as related to the total duration of labor, have generally been the important considerations in arriving at the decision.

High forceps extractions have been done when, after a moderate test of labor, a prognosis that a lightly engaged head would enter the pelvis with a further prolonged test, has failed to be realized. Also certain cases of grave maternal and fetal danger as eclampsia, prolapsed cord and ante partum hemorrhage have been delivered by this method and have accordingly increased the fetal mortality rate of this group. Axis traction, using the Irving forceps, has been the sole technique. There has been no maternal mortality except in one case of eclampsia and here, the delivery could not be held responsible for the death.

VERSION

Version has been used in this series, (1) as a quick method of delivery in emergencies as eclampsia, placenta previa, and prolapsed cord, and (2) as an elective method of delivery in multiparae with transverse presentations, or

distocia with the head above the inlet. Although the emergencies have been largely responsible for the high fetal mortality, we have considered that the operation always carried considerable fetal risk and, could not be offered as a method of delivery with any degree of certainty as to giving a living baby.

CESARIAN SECTION

Classical sections have been performed at a rate of 1 in 69 deliveries. Unless section was performed because of previous abdominal delivery, a test of labor of several hours generally has been given before making the decision against vaginal delivery. In a few where operation was done before labor had started, a tendency to severe hemorrhage has been observed. Abdominal wall infection has occurred in a few cases but no serious infection and no deaths have occurred in the series.

The general unavoidable maternal risk of section, the necessity of repeated operation in future pregnancies, and the possibility of future peritoneal complications have influenced us in adopting a policy which tries every fair possibility for a successful vaginal delivery.

BREECH DELIVERIES

In our breech deliveries, the high infant mortality of 16.4% is evidence not only of the usual increased danger to the baby in this presentation but also, of errors of management on our part. Adoption of some of Potter's principles in extraction, combined with very careful watching of the second stage and extraction at the slightest sign of fetal distress, are measures which at present are giving better results in lowering this mortality. No success has followed attempts at external version to a vertex before the onset of labor, although a careful standard technic for this procedure has not been routinely attempted.

ABORTION

1. *Therapeutic Abortion.* This has been done in 14 cases for severe organic disease of the mother where continued pregnancy was thought to endanger her life. These include heart disease, nephritis, toxic vomiting, severe pyelonephritis and tuberculosis. The methods used have been; (1) catheter, (2) gauze packing, (3) curettage, (4) dilating bag, and (5) hysterotomy. Where the condition in the woman has been permanent and such as would endanger her life in future pregnancies, operative sterilization has been done, either following vaginal abortion or coincident with hysterotomy.

2. *Incomplete Abortion.* Hemorrhage has been our chief concern in non-infected cases and has been controlled by pituitrin and ergot with vaginal or uterine packing until the uterus emptied itself or the contents were removed by curettage. In the presence of infection we have

avoided all operative procedures in order to prevent the spread of infection, and have generally been rewarded by the uterus emptying itself spontaneously. Where the temperature has become normal and there were still signs of retained fetal products, these have been removed by gentle curettage.

TOXEMIA OF PREGNANCY

There have been 127 cases of toxemia, including 20 with eclampsia. Among those with eclampsia there was one maternal death, making a death rate of 5%. The fetal deaths in the entire toxemia group were 28, or 22%.

The usual eliminative treatment of toxemia has produced very little improvement in the condition but in many cases the progress of the disease has been so restrained that full term has been reached before the onset of severe symptoms. The most important point in treatment has been the ability to determine whether conservative treatment could be safely continued with the hope of reaching full term, or whether danger was imminent and the time had arrived to empty the uterus. Our experience has been that the danger of losing the baby from prematurity due to induction of labor at 8 months was not as great as the danger (1) of death from toxemia before labor had started, and (2) of death during possible eclamptic seizures. This fact, together with the undoubted increase of safety to the mother, both as to prevention of eclampsia and permanent kidney damage, has largely influenced us to the frequent induction of labor in toxemia at varying times after 7½ months of pregnancy.

In the presence of eclampsia we have ruptured the membranes and inserted a dilating bag. We have then employed conservative treatment by morphine and moderate venesection until labor started. At full dilatation delivery has generally been terminated by forceps or version under light ether.

Under this plan of early termination of the toxemic pregnancy we have discovered very few later cases of chronic nephritis, making follow-up observations at one to two years later in about two-thirds of the cases.

PUERPERAL SEPSIS

There have been 31 cases of definite sepsis with 3 deaths, one following emptying of the uterus for pernicious vomiting, one following delivery after accidental hemorrhage with toxemia and one following easy low forceps delivery. Of these 31 cases, the deliveries of 18 were operative and 13 normal. Long duration of labor, the presence of chronic nephritis, toxemia and extreme debility from varying causes have all seemed conducive to the chance of infection. However, some of the most severe cases have occurred in speedy, normal deliveries where

there was very slight chance of externally induced infection during or following labor.

Our treatment has been very conservative, avoiding operative interference and intrauterine treatment. Both mercurochrome and gentian violet have been tried by intravenous route without apparent benefit, and their use has been discontinued. Open air ventilation, forced feeding with high caloric values, alcohol to supplement the feeding, strychnine and iron as general tonics, have been measures generally used and all of definite value.

Masses of exudation in the pelvis have slowly become absorbed, so that examination several months after symptoms have gone has

TABLE 5
COMPLICATIONS

Abscess, hip joint of baby	1	Hemorrhage, post partum	79
Anemia of pregnancy	7	Hodgkin's disease	1
Appendicitis	3	Hydatid mole	1
Asthma	1	Hydramnios	10
Brachial paralysis	5	Hypertension (not toxemia)	9
Breast abscess	3	Hyperthyroidism	6
Bronchiectasis	1	Incarcerated retroverted uterus	1
Constriction ring	22	Insanity	6
Contagious disease:		Nephritis, chronic	3
Measles	1	Phlebitis	10
Scarlet fever	6	Placenta, manual extraction	27
Tuberculosis	8	Polyp of cervix	1
Pneumonia	4	Polycthemia	1
Erysipelas	4	Prematurity	59
Chickenpox	2	Prolapsed cord	19
Umbilical sepsis	1	Pylonephritis	39
Diabetes	4	Pylorospasm (baby)	1
Fetal abnormalities:		Syphilis	3
Hydrocephalus	4	Vomiting of pregnancy, severe	17
Spina bifida	4	Delivery:	
Congenital heart	4	Cesarian	1
Anencephalus	1	Normal	4
Heart disease:		Forceps	7
Mitral stenosis	8	Breech	1
Mitral regurgitation	1		
Myocarditis (toxic)	3		
Goltre heart	3		
Hysteria	1		
Hemorrhagic disease of new born	3		

shown only the slightest signs of these inflammatory collections. Labors occurring subsequent to such infections have been free from recurrences of pelvic infection.

PLACENTA PREVIA

There have been 9 partial and 3 complete previas with no maternal mortality, and a fetal mortality of 50%. These have been treated by rupture of the membranes and insertion of a weighted number 5 or 6 Voorhees bag beyond or through the placenta. With the expulsion of the bag through the cervix, delivery has been completed immediately, either by forceps or version. Uterine packing has been used in a few but has been avoided unless strongly indicated.

ABRUPTIO PLACENTAE

Antepartum separation of the normally implanted placenta with hemorrhage of marked degree has occurred in 13 cases. It has been associated generally with toxemia and in all there were varying degrees of shock. None of the mothers died of hemorrhage, although one (also toxemic) died later of sepsis following delivery. Rupture of the membranes, pituitrin in small doses, occasionally insertion of a number 4 or 5 Voorhees bag and vaginal delivery as soon as possible without severe injury to the cervix, have constituted our program in this condition. Uterine packing in about half of these cases has been necessary following delivery. Seven of the babies have been stillborn, two died later of prematurity and one lived.

COMPLICATIONS

Besides the above common obstetrical conditions, a great variety of clinical conditions of

varying importance have been noted and are tabulated in Table 5.

CONCLUSION

Our fetal death rate of 4.9% is somewhat high, although it is much lower than the usual rate. We have tended towards conservatism in delivery, preferring to take more chance with the baby than with the mother. This has enabled us to maintain the low maternal mortality of 2% in viable deliveries and .28% including abortions—a rate much below the average. I realize that our number of cases is small and, as such, not a fair criterion upon which to base definite judgement as to results. I do feel, however, that our experience is of certain value as evidence that obstetric treatment in a general hospital, while not as ideal as in the pure maternity hospital, may be a definite factor in preventing those disasters which tend to maintain the general high fetal and maternal mortality.

A FURTHER NOTE ON ARTIFICIAL INSEMINATION

BY SAMUEL R. MEAKER, M.D.

ALL that is most valuable in our present knowledge of sterility has resulted from three advances made during the past thirteen years. In transuterine insufflation Rubin has provided a means of evaluating, and to some extent of treating, the tubal element. We have learned to estimate more carefully the influence of several factors, mainly the endocrine balance and to a lesser degree the items of diet and hygiene, upon the fertility of the sex-cells. No other advance, however, has contributed so much as the epoch-making work of Hühner in post-coital examination.

Hühner has shown that conception is most unlikely to occur unless the cervix is directly inseminated at ejaculation, since spermatozoa very quickly perish in the acid environment of the vagina. That pregnancy has many times followed vulvar ejaculation is, of course, well known, but most of these cases are in women not habituated to coitus, whose vaginal chemistry and bacteriology are of the virginal type and hence not inimical to spermatozoa. The extensive use, with success, of coitus interruptus as a contraceptive measure offers wholesale proof that similar conditions do not obtain in the married woman. The weight of evidence in support of Hühner's conclusion grows stronger from year to year.

On the basis of this teaching we now recognize as causes of sterility certain mechanical faults of delivery, reception, or both combined, which prevent direct insemination of the cervix. There may be simple maladjustment of the parts, without definite abnormality in either husband or wife. In the woman anteversion of

the cervix, with or without retroversion of the uterus, is the condition most commonly responsible for a fault of reception. In the man hypospadias usually and stricture often prevents intra-cervical delivery. There are also several other conditions, less frequently encountered, which may cause imperfect delivery-reception.

Another and quite different group of causes of sterility comprises various abnormalities on the part of the cervical secretions which render them hostile to spermatozoa. The secretions may be acid, or infected, or simply thick and tenacious; in any of these events they are likely to prevent spermatozoa which have entered the cervix from reaching the upper genital tract.

Direct examination of the cervical material post coitum, with the supplementary examination of a condom specimen in many cases, allows us definitely to establish or to rule out causes of sterility of these two groups—the faults of delivery-reception, and the cervical hostilities. At the same time we incidentally gain accurate knowledge of the male's power of production—the only item of information which would be obtained from the condom-specimen alone.

There are three possible results of a post-coital examination: the cervix may yield (1) spermatozoa in every way normal; (2) defective spermatozoa; or (3) no spermatozoa at all.

In the first case we at once find ourselves in possession of information upon three important points: male production is normal (no condom-specimen is needed); delivery and reception are normal; and the cervical secretions are normal. In short, the cause of the sterility is by a single examination demonstrated to be in the female,

and in her supracervical genital tract. No other single examination can tell us so much.

In the second case, where defective spermatozoa are recovered from the cervix, a condom-specimen must be studied. If it contains normal spermatozoa, then again we know three things; male production is normal; delivery and reception are normal; but the cervical secretions are in some way hostile. If, on the other hand, the spermatozoa in the condom presents the same defects as those in the cervix, then we have identified a fault of production and ruled out faults in delivery-reception and in the cervical secretions.

In the third case also, where no spermatozoa are found in the cervix, it is necessary to see a condom specimen. If it shows normal spermatozoa, or for that matter any spermatozoa, then there must be a fault of delivery-reception. If the condom contains no spermatozoa, we are obviously dealing with a fault of production.

The main causes of sterility are found to occur, roughly speaking, with the following relative frequency:

Defective production of spermatozoa	48% of cases
Male faults of delivery	4% " "
Female faults of reception	16% " "
Cervical hostility	16% " "
Tubal occlusion	16% " "
Defective ovulation	16% " "

Thus in twenty per cent. of sterility cases (the faults of delivery-reception plus the cervical hostilities), the difficulty is of such a nature that it can be overcome by artificial insemination. In the other eighty per cent. such methods would, of course, be utterly worthless. Post-coital examination conjoined with condom-study makes it possible to distinguish the twenty per cent. from the eighty with the greatest accuracy.

It does not follow that artificial insemination is the method of first choice in the twenty per cent. of favorable cases. The ideal treatment is to correct the abnormality so that natural insemination becomes efficient. More often than not this can be done; occasionally, however, it is difficult or impossible, and in such cases artificial methods are clearly indicated, for they then offer the only reasonable hope of cure.

When the average normal man and woman marry and have coitus without contraception, it is generally several weeks and often several months before pregnancy occurs, because with people of ordinary or mediocre fertility a large element of chance is involved in the meeting between a highly fertile ovum and a spermatozoon of similar quality. Hence in undertaking artificial insemination one must be prepared to repeat it, if necessary, a great many times before considering it a failure. This point is of fundamental importance. The reason why Marion Sims and his followers had such exceedingly poor results with artificial insemination that the method soon fell into disrepute was partly because they

had no idea whatever of the proper selection of cases, and partly because they expected immediate successes after one or two attempts. If every sterility case, without the slightest preliminary study or selection, received artificial inseminations to the number, if necessary, of fifty, there is little doubt that nearly twenty per cent. would be cured. If every sterility case in which careful study had clearly identified a fault of delivery-reception or a cervical hostility and had ruled out all other causes were treated in the same way, the percentage of successes in such a selected group should approach one hundred. In other words, we have here what is probably the most efficient single method of treating sterility, if it is used intelligently. It has never been so used in the past.

Two years ago I published¹ a paper on artificial insemination, in which I recorded a successful result in the first case in which I had used the method. Since then I have employed it in three other carefully chosen cases, without results. Two of the three cannot be regarded as failures, since in each of them only a single insemination has as yet been done. I am now reporting my fifth case and second success.

CASE I. Mrs. F. R., twenty-one years old, consulted me for sterility in October, 1924. She had then been married nineteen months.

The wife's past history was good, except for tuberculous cervical glands in early childhood. Her hygiene was satisfactory with regard to exercise and diet. Menstruation had been established at thirteen; the periods occurred regularly every twenty-five to thirty-two days, lasted three to seven days in moderate amount, and were not characterized by any special pain. She had no leucorrhoea. For nearly a year the failure to conceive had been a source of constant worry, and to this cause the patient attributed a drop in weight from 127 to 107 pounds.

The husband's past history and present health were good. His diet was reasonable; he made a practice of daily gymnastic work.

The sex-life of the couple was not grossly at fault, though the wife's desire was minimal.

General physical examination of the wife showed a young woman rather thin and very nervous, but organically sound. The routine pelvic examination revealed no abnormality except that the uterus was in the third degree of retroversion-flexion and in slight descent; the cervix was anteverted and the os externum was covered by the anterior vaginal wall. Further special examinations were then carried out. Transuterine insufflation, done twice, each time easily demonstrated the patency of the tubes. The cervical secretions, though somewhat viscid, were normal from both the chemical and the bacteriological points of view. Examination post coitum showed a few dead spermatozoa in the vagina and none at all in the cervix. The condom-specimen, on the other hand, contained spermatozoa satisfactory on the grounds of number, motility, and morphology.

From the study as thus far carried out it seemed evident that a cause, and probably the only cause, for the sterility was the non-occurrence of cervical insemination, and that this, in turn, was due to the position of the womb. Accordingly in November, 1924, the uterus was replaced by manipulation and held in antelexion by a Smith pessary.

During the ensuing year she wore the pessary in intermittently, and the womb remained forward. Coitus a parte postica, partial withdrawal, and other

expedients were tried in the hope of obtaining better mechanical adjustment. The wife's general health and hygiene were regulated. No pregnancy took place, and the case came up for systematic review in November, 1925.

Examination post coitum now demonstrated numerous spermatozoa in the cervix, thus proving that the mechanical obstacle to insemination had been overcome. The spermatozoa were, however, all dead, being entangled in a thick and slightly acid cervical mucus. That they had met their fate in the cervix was clear, for in a condom-specimen they were again found to be entirely normal. So it became evident that a second obstacle had now to be surmounted—this time a hostility on the part of the cervical secretions.

Methods of treating this condition were explained to the patient, and artificial insemination was proposed as an alternative. She was considerably discouraged, and it was six months before she was able to reach any decision. During this interval she sought other advice, and was urged by two different surgeons to undergo an abdominal operation for sterility, the indications for which were not specified. With some difficulty I kept her out of their hands.

Finally she concluded that artificial insemination was at least worth a trial. We planned to do this first just before a period, and then to repeat it afterward. Her last period was on April 12, 1926. Insemination was done on May 7; the period due May 10 did not appear; and she is now (July 12) about nine weeks pregnant.

I am able to report another successful case which makes up in uniqueness of feature what it lacked in scientific study. This is, I think, the only recorded instance of what might be called artificial auto-insemination.

CASE II. Mrs. S. F., thirty-two years old, had been married six years when she first consulted me in the summer of 1925. During the early months of mar-

riage there had been a pregnancy, terminated by induced abortion at seven weeks. Two years later she underwent a partial thyroidectomy for exophthalmic goitre; the operation was not sufficiently radical, for the symptoms of hyperthyroidism persisted. Notwithstanding this handicap she became very anxious to have a child, and after two more years submitted to a dilatation and curettage, done for no particular reason and without any study of the case. Naturally the results were unsatisfactory; in the ensuing two years conception did not occur.

This patient is a midwife trained in Europe, and possesses considerable practical knowledge of female genital anatomy. In late April, 1925, on her own assumption that the seed did not get into the womb, she inseminated her cervix with a glass syringe. There was no period in May; breast-changes were doubtful; the stomach and the bladder were not disturbed. On June 22 she began to stain and to have very acute pain in the lower abdomen, in the center and on the left side. These symptoms continued with increasing severity until I first saw her on June 27. Examination at that time revealed a mass in the left vault, ill-defined, soft, and exquisitely tender; the temperature was 98, and the pulse 140. Operation was at once done on the diagnosis of tubal pregnancy. It proved, however, that she had a large and very acute left pyosalpinx; there were no adhesions around the tube, and the other pelvic organs showed no extension of the inflammation.

After salpingectomy and a rather stormy convalescence complicated by auricular fibrillation, she disappeared from observation for nearly a year. She was seen once more on June 15, 1926. Not daunted by her previous experience, she had again performed artificial insemination upon herself on May 15. Her period due May 29 did not appear; breast-symptoms and urinary frequency had been noted since June 1. Examination showed definitely the signs of a four weeks' uterine pregnancy.

REFERENCE

- 1 Menker: The Place of Artificial Insemination in the Treatment of Sterility. *Boston Med. and Surg. Jour.*, Vol. 191, No. 11, pp. 495-497, Sept. 11, 1924.

MEDICAL PROGRESS

PROGRESS IN SYPHILIS—1925

BY AUSTIN W. CHEEVER, M.D.

THE last year has not shown very much that is new in the treatment of syphilis. The indications for bismuth are becoming better understood and the drug is considered to be of definite value. The reports in regard to tryparsamide seem more encouraging and there seems to be less fear of eye complications than at first. Malarial inoculations in neuro-syphilis are gaining in favor.

EXPERIMENTAL

Pearce, Louise (*Arch. of Derm. and Syph.*, 12:1, July, 1925), shows that the regular administration of small doses of potassium iodid at bi-weekly and weekly intervals to rabbits infected with syphilis has resulted in modifying the severity and in shortening the duration of experimental disease as measured both by the character of the primary orchitis and of the

general manifestations. She suggests that the therapeutic action of potassium iodid in experimental syphilis of the rabbit may be associated with the stimulation of the host's defense mechanism.

LABORATORY METHODS

Faupel, M. (*Bulletin of the Johns Hopkins Hospital*, 27:170, 1925), compares the Wassermann and Kahn tests clinically in 400 cases. There was absolute agreement in 90.2%. In 3.8% there was good relative agreement and in 1% absolute disagreement. The coefficient of correlation for the whole group was 0.79%.

LATE SYPHILIS

Musser, J. H., and Bennett, A. E. (*Amer. Jour. of Syph.*, 9:589, Oct., 1925), examined the spinal fluid of 30 patients with syphilitic

aortitis, of whom 14 had aneurysms, and found 20% with associated cerebrospinal involvement. In the comparative necropsy study they found 38% of 102 cases of vascular neuro-syphilis to have late aortitis as well; 28% of 110 cases of general paresis and 50% of 50 tabetics had aortitis.

McNamara, W. L. (*Amer. Jour. of Syph.*, 9:470, July, 1925), working among negroes in Panama where it was almost impossible to find a transfusion donor whose blood was both compatible and gave a negative Wassermann reaction, transfused ten non-syphilitic patients from six known syphilitic donors who were in the late stages of the disease. There was marked improvement in the anemic condition of the recipients, none of whom developed clinical evidence of syphilis or a positive Wassermann reaction during an observation period of from sixteen to twenty-two weeks. He concludes from these cases and from several others of which no record was kept, that it may be safe to use the blood of persons with late syphilis for transfusion.

ARSENICALS

Myers, C. N., and Cornwall, L. H. (*Amer. Jour. of Syph.*, 9:647, Oct., 1925), interested in the legal aspect of arsenic in the treatment of syphilis, were led to quote many ancient and modern references regarding the medical-legal aspect of arsenic. They state that arsenic is very widely distributed in nature, being taken in minute quantities with the food, and give figures for the amount of arsenic which has been found in sea water, salt, beer, etc. They present their findings in a large series of individuals taken at random as to the amount of arsenic found in urine, blood and various organs of non-syphilitic babies, children and adults. Analysis of this large group shows that arsenic is a normal constituent of urine to the amount of 40 mg. per 100 gm. of dried specimen. In the blood the amount is less but may occasionally occur in fairly large amounts; it normally should not exceed .30 mg. per 100 gm. of dried specimen. Any excess over this amount is apt to indicate that patients are eating food containing arsenic or taking it as a medication. Arsenic is found in considerable amount in almost all cases in babies; occasionally the amount in the cord and brain is quite high. As the age increases the amount of arsenic in the various viscera decreases. From the point of view of legal medicine it is evident that considerable thought must be given in presenting a mirror obtained by the Marsh test in cases in which criminal efforts are suspected to have been employed. Without establishing the presence of syphilis and without a clear cut statement of whether the individual may have been treated with arsenic in the form of arsphenamine it would be difficult to state whether arsenical poi-

soning has been the cause of death unless amounts in excess of those cited as normal values are found.

Sanford, H. N. (*J. A. M. A.*, 85:242, July 25, 1925), reports the satisfactory use of neoarsphenamine injections intraperitoneally in congenital syphilis. In only one case did they have any reaction; this consisted of livid patches, slight cyanosis and vomiting lasting about ten minutes.

Dietel, F. (*Munchen med. Wchnschr.*, 72:128, Jan. 23, 1925), advises for the treatment of arsphenamine infiltration the withdrawal of as much fluid as possible through the needle which has been used for the injection, and immediately the injection of 10 c.c. of physiological saline solution into the subcutaneous tissue. This dilutes the drug and relieves the pain. Stein, A. E. (*Munchen med. Wchnschr.*, 72:297, July 31, 1925), recommends diathermy in such cases twice daily for twenty or thirty minutes. Absorption by this method is much more rapid than if left alone.

TRYPARSAMIDE

Tryparsamide is gradually becoming recognized to be less dangerous as regards eye complications than it was at first thought to be though it must be used with caution. It has also become understood that while favorable results usually appear early, frequently fifty or more injections have to be employed.

Kennedy, F., and Davis, T. K. (*Arch. Neurol. and Psychiat.*, 13:86, Jan., 1925), believe that the maximum dose of the drug should be three grams while the average dose should be two grams.

Stokes, J. H., and Wilhelm, L. F. X. (*Arch. of Derm. and Syph.*, 11:579, May, 1925), emphasize the need of accurate plotting of the visual fields and the determination of the visual acuity before treatment is begun, with frequent rechecking during the first course; yet they find the damage to the eye relatively slight. In three of their series of eight who had objective evidence of damage in the form of contraction of fields and who were reexamined after an interval of several months there was complete recovery.

Solomon, H. C., and Viets, H. R. (*J. A. M. A.*, 85:329, Aug. 1, 1925), have found that by fifty, seventy-five or more injections good results are often obtained which would not have been from shorter courses. They have frequently seen more clinical improvement with the use of tryparsamide than with any other form of treatment.

Fordyce, J. A., and Myers C. N. (*Amer. Jour. of Syph.*, 9:490, July, 1925), found an absence of arsenic in the spinal fluid of fourteen per cent. of patients who were receiving tryparsamide intravenously. In other cases the amount did not exceed that found after the administration of other arsenicals.

Wile, U. J., and Wieder, L. M. (*J. A. M. A.*, 84: 1710, June 6, 1925), report further on the use of this drug in eighty-five patients with the vascular type of neuro-syphilis, who have been observed for one and a half years. Twenty-four patients of the entire group were considered clinically improved. It was noticed that improvement usually occurred in the first or second courses of treatment. There were no serious untoward effects from tryparsamide.

Dawson, W. S. (*Lancet*, 1:1072, May, 1925), was not impressed with the results obtained in twenty cases of paresis and tabes, though some had their course arrested. He feels that better results would have been obtained with other arsenical compounds.

BISMUTH

Belding, D. L. (*Arch. of Derm. and Syph.*, 12:334, Sept., 1925), gives details of a group of patients unresponsive to arsphenamine, all of whose Wassermann reactions had not been made negative by arsphenamine, following courses of bismuth injections there was a considerable reduction in the Wassermann reaction which seemed permanent, at least it was so for the six months the patients were under observation. He found that the toxic effects were surprisingly slight.

MERCURY

Fox, J. C., Jr., Gildersleeve, G. H., and Preston, J. F. (*Arch. of Derm. and Syph.*, 11:768, June, 1925), found that flumerin caused a rapid regression of all early lesions, and slow but steady healing of all late ones. No striking effects on the Wassermann reactions were obtained with either flumerin alone or when used in conjunction with arsphenamine. There was a marked variation in individual tolerance for the drug.

SODIUM THIOSULPHATE

Hall, G. A. M. (*China Med. Jour.*, 39:785, Sept., 1925), reports good results from the use of this drug in four severe cases of mercurial stomatitis.

Harrison, J. (*Lancet*, 1:1297, June 6, 1925), reports the experimental work by Dale and Clements which seem to show that injections of sodium thiosulphate at the same time with neo-arsphenamine do not interfere with the therapeutic action of the latter drug.

McBride, R. H. (*J. A. M. A.*, 84:729, Mar. 7, 1925), describes a case of arsphenamine "encephalitis" successfully treated with sodium thiosulphate. He points out that he has not known a patient with this complication treated by any other method who ever recovered.

Kuhn, H. A., and Reese, H. H. (*J. A. M. A.*,

85:1804, Dec., 1925), report favorable results from the use of this drug in several cases of neo-arsphenamine jaundice, ten cases of dermatitis and one case each of polyneuritis, acute arsenical and acute mercurial poisoning.

Haskell, C. C., Henderson, W. C., and Hamilton, J. R. (*J. A. M. A.*, 85:1808, Dec., 1925), gave a lethal dose of mercury intravenously to dogs, followed by injections of sodium thiosulphate, the controls receiving none. Both groups of dogs died at the same time, showing therefore that sodium thiosulphate thus used was entirely ineffective either to save the animals or even to delay death.

MALARIA

Eldridge, W. W. (*J. A. M. A.*, 84:1097, Apr., 1925), reports on the treatment by this method of sixty-eight cases of paresis in all stages observed for more than a year. Thirteen died during the observation period, a number from intercurrent infections. Of those who lived about thirty-three per cent improved and about thirty-eight per cent showed further deterioration. The moderately advanced cases appeared to respond best to treatment.

Davidson, T. W. (*Brit. Med. Jour.*, 1:1452, Mar., 1925), considers the percentage of successfully treated about thirty-five.

Donner, S. (*Finska lak-sällsk. förh. Helsingfors*, 67:8, Jan., 1925), advises this treatment especially in early cases, yet old cases should not be excluded. The treatment is contraindicated in advanced physical weakness. About sixty per cent of his group were improved.

Pagniez, F. (*Presse med.*, 33, 717, May, 1925), states that general paralysis is unknown in tropical countries where there is much malaria. He quotes statistics of over four thousand officers of whom one hundred and ninety-five later developed paresis and compares this with a group of two hundred and forty-one patients with syphilis who had severe infections and none of whom developed general paralysis. He quotes another author who had ten syphilitic patients who became infected with malaria during the secondary period and all developed paresis.

REAL MUSIC FOR THE SICK

The National Association for Music in Hospitals, Steinway Hall, New York City, announces a course of instruction for nurses and musicians in the practical field of taking the right music, rightly given by the right people, to the bedsides of patients in hospital wards.

Instruction will be given by Mrs. Isen, director of music for the association, and will consist of lectures on the many phases of the psycho-physiological effect of music on the sick, together with actual conducting of properly organized programs in hospital wards.

The Massachusetts Medical Society

THE CONTROL OF THE COMMUNICABLE DISEASES PREVALENT IN MASSACHUSETTS*

With a Study of the Mortality Due to Them During the Past
Seventy-Five Years

BY EDWARD G. HUBER, M.D.

(Continued from page 422)

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6. DIPHTHERIA AND CROUP

Diphtheria was probably known to the ancients; and during the Middle Ages it caused

with such logical conclusions, that nothing more remained to be learned except the actual cause and the developments which have followed that discovery. He also, insisted on the identity of croup and laryngeal diphtheria and was probably the first to call attention to the transmission of the disease through infected eating utensils.

In Massachusetts "croup" appears as a cause of death in the first registration report, for the year 1842. During 1858 and 1859, "diphtheritis" was also occasionally reported as a cause of death. Beginning in 1860 "diphtheritis"

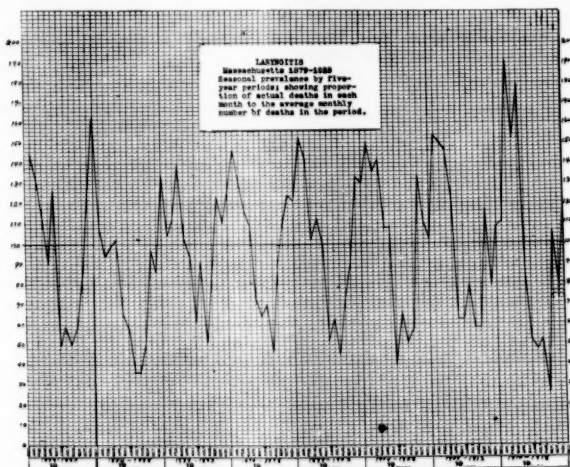


FIGURE 41

devastating epidemics in Europe. It invaded the American Colonies about the middle of the seventeenth century, and was studied by Bard, the first American physician to describe it. He had very advanced ideas for his time, for he believed that croup was diphtheria of the larynx. But modern knowledge of the disease really dates from 1821 when Bretonneau, in the garrison at Tours, carefully studied an epidemic and then wrote so detailed a description

became "diphtheria" and this diagnosis and "croup" divided attention until 1901. In that year "croup" was changed to "diphtheria and croup" although "diphtheria" was the more popular diagnosis during the eleven years these two diagnoses continued to appear. From 1912 to 1920 only one term was used—"diphtheria and croup"—in 1921 "croup" ceased to be an official cause of death.

"Laryngitis" appeared as a cause of death until 1901 when it became "affections of the

*Published by the Committee on Public Health of the Massachusetts Medical Society.

larynx." Up to 1879 the annual number of deaths under the former diagnosis was always less than thirty, although there had been a gradual increase since 1849. From 1879 to 1918 the reported annual deaths always exceeded thirty; the last few years have seen a gradual decrease well below that number. Figure 44 shows the seasonal variation for "laryngitis" from 1879 to 1918. A comparison with figure 45, which shows the seasonal prevalence of deaths from diphtheria and croup from 1849 to 1922, demonstrates noticeable resemblances. In number of deaths reported due to diphtheria and croup December led in ten of the fif-

teen five-year periods, November in three, and January in two. For "laryngitis," of the eight quinquennia analyzed, the peak is shown in December twice, in January four times, in February once, and in March once, although this last peak exceeded that of December by a small amount only. From 1919 to 1922 there were reported 2393 deaths from diphtheria of which 90% were under the age of ten. For purpose of comparison with the age distribution in "laryngitis" this period is taken as a

standard, since diagnostic methods were probably applied more consistently than ever before. Deaths due to "laryngitis" from 1849 to 1900 show a large proportion under ten years of age, as shown in table 7. Since the annual number of deaths from affections of the larynx has been well under thirty ever since 1918, and

the percentage of deaths from laryngitis under the age of ten has exceeded sixty since 1860, it seems fair to assume that at least all deaths in excess of thirty per annum ascribed to "laryngitis" probably were due to diphtheria. This adds to the mortality rates for diphtheria and croup per 100,000, from the year 1880 to 1917, increments varying from 0.4 to 3.7, the median being 1.7 and the arithmetic mean 1.8.

Up to and including 1899 quinsy was a reported cause of death. From 1892 to 1899 the average number of deaths per annum was four. Before then there had been 864 deaths (1849-1891) reported from this cause, of which 565, or

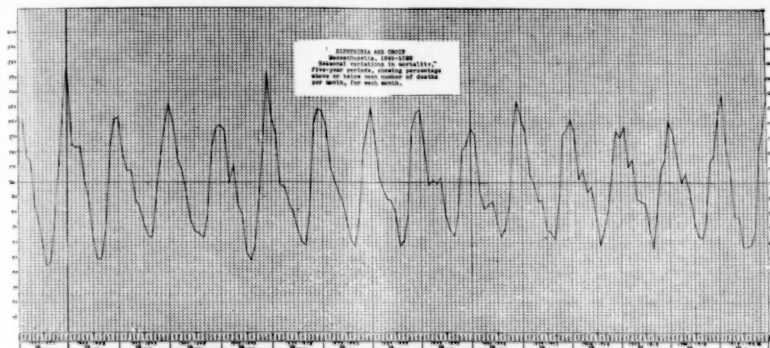


FIGURE 45

65.4% died at ages under ten. Assuming that all deaths from this cause in excess of four per year were probably diphtheria, another series of increments should be added to the rates for diphtheria and croup. In this case the arithmetic mean of the added rates is 1.1, the median being 0.6. There is one rate of 4.9, much in excess of the others (1861), which accounts for the high mean.

Figure 46 shows the mortality rates for diphtheria and croup, and figures 47 and 48 show those for diphtheria and croup plus the rates for laryngitis and quinsy just given. There is no significant difference between them. The first great increase in deaths from diphtheria and croup was in 1863; this epidemic continued through the entire next year but to a lesser extent. Both diphtheria and croup show a sharp rise in the number of deaths reported in those years. This is not true of laryngitis and quinsy, for, as would be expected during an epidemic when attention is attracted to a particular disease and most cases at all resembling the prevalent affection are included under that diagnosis, those terms would give way to the more popular ones—diphtheria and croup.

After this epidemic, the rate dropped sharply to the low one of the decade before, to remain

TABLE 7

LARYNGITIS, MASSACHUSETTS, 1849-1918

Years	Total deaths	Deaths under ten	Per cent. under ten
1849-1860	61	27	44.3
1861-1880	388	252	65
1881-1900	1,671	1,163	69.6
1901-1918	1,224	758	62

standard, since diagnostic methods were probably applied more consistently than ever before. Deaths due to "laryngitis" from 1849 to 1900 show a large proportion under ten years of age, as shown in table 7. Since the annual number of deaths from affections of the larynx has been well under thirty ever since 1918, and

stationary until 1875-1877 when there was an even sharper rise. This time the increase in cases was largely in diphtheria, slightly in croup, and, as before, scarcely noticeable in laryngitis and quinsy. The rate then gradually dropped until the next peak in 1889, which was not so marked as either of the other two. Very probably this increase in the rate

peak in the curve for diphtheria and croup was in 1894, and the fall of that year saw the establishment of the state antitoxin laboratory which began the distribution of antitoxin during the final months of the year. The gradually increasing therapeutic use of that invaluable remedy shows its effect on the mortality rate (figures 46-48). The last marked rise in rates

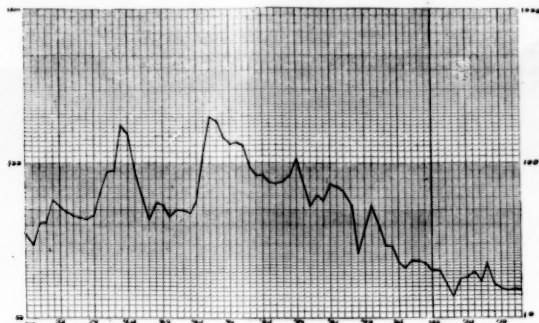


FIGURE 46
DIPHTHERIA
MASSACHUSETTS, 1849-1922
Crude Mortality Rate per 100,000

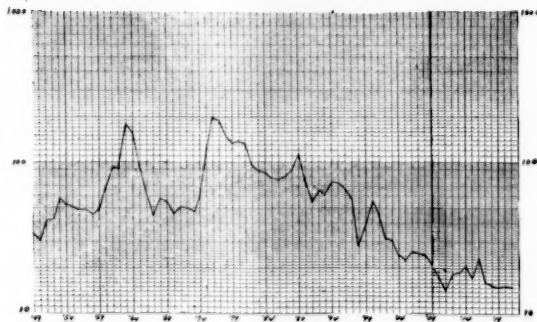


FIGURE 47
DIPHTHERIA AND CROUP
(Including part of laryngitis and quinsy)
MASSACHUSETTS, 1849-1922
Crude Mortality Rates per 100,000

was due to the fact that the bacillus had been discovered in 1884 and that laboratory diagnosis had thus come to the aid of physicians, enabling them to recognize more cases. This supposition would seem to be borne out by the fact that the increase in reported deaths was all in diphtheria proper and not in croup at all. In fact there was a constant drop in the number of croup deaths from 1884 to 1911 when this ceased to be a separate diagnosis. The next

and the lowest of the peaks, occurred in 1900. In spite of these peaks in the curve figures 46 and 47 show a uniform rate of decline of the mortality rate from its high point in 1876, until 1911, when it became stationary. Figure 49, with smoothed rates, shows this somewhat better. Had this same rate of decline continued instead of stopping in 1911 there would now be reported nine instead of fifteen deaths per hundred thousand per year. The prob-

ability is that the present methods of control, complete as they are, will have no further effects in controlling the mortality until the public in general has become more coöperative. It may be that, were it not for the very adequate control measures now largely in use, there would

than five, and that of these almost nine tenths were from one to four years of age. About a fourth of all the deaths were between the ages of five and nine. By far the greater proportion of all the deaths is therefore in pre-school age. Figures 50-52 show no differences of any

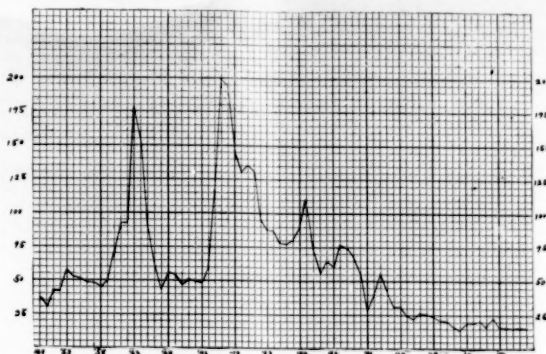


FIGURE 48
DIPHTHERIA AND CROUP
(Including part of laryngitis and quinsy)
MASSACHUSETTS, 1849-1922
Crude Mortality Rates per 100,000

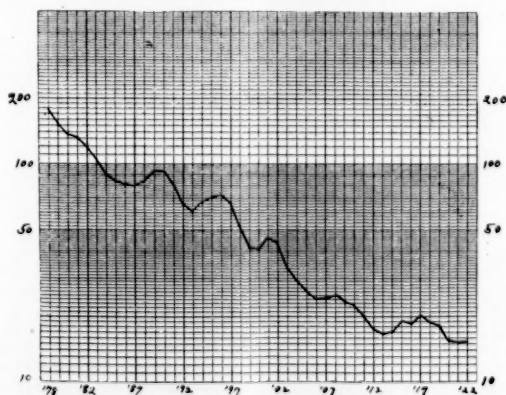


FIGURE 49
DIPHTHERIA AND CROUP
(Including part of laryngitis and quinsy)
MASSACHUSETTS, 1878-1922
Crude Mortality Rates per 100,000
Three-year Moving Average

be prevailing an epidemic of diphtheria which would be giving us mortality rates of 200, as in 1875, instead of the existing rate of about 15.

Table 8 shows that the deaths reported from diphtheria and croup have been equally divided between the sexes, that almost two thirds of all deaths from this disease have been at ages less

significance between the sexes in the mortality rates for the different age groups except that at age under 1 there is a persistently higher rate among males. In figures 51 and 52 the age group under 5 in each sex is seen to follow the crude rate most closely; properly speaking the latter follows the former, since most deaths are at

TABLE 8
DIPHTHERIA AND CROUP, MASSACHUSETTS
1849-1922

Total deaths, all ages	33,480	
Deaths under 5	54,886	65.7%
Deaths 5-9	20,093	24.0%
Deaths 10-14	4,126	4.9%
Deaths 15-19	1,247	1.5%
Deaths all ages, males	41,857	50.1%
Deaths all ages, females	41,578	49.9%

Total deaths, all ages	36,665	
Deaths under 1	2,728	7.4%
Deaths 1-4	20,679	56.4%
Deaths under 5	23,407	64.0%

that age. This proportion also has fallen, with great fluctuations, until 1906 when it became stationary at about 16%. In figures 3-6 it was shown that except at age under 1 diphtheria had led scarlet fever, measles, and whooping cough in proportionate mortality, most markedly at ages 1-4 and 5-9.

In 1893 the State Board of Health suggested that cases of diphtheria be reported, and in 1907 it was authorized by law to require this to be done. In 1874 the Board had secured promises from about a hundred physicians in the state who agreed, voluntarily, to report prevalent diseases weekly, but success was not great.

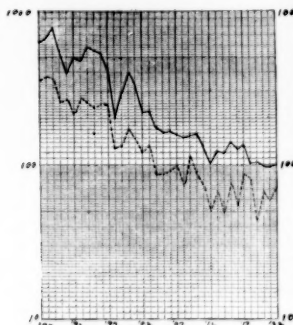


FIGURE 50A
DIPHTHERIA
MASSACHUSETTS, 1887-1922
Specific Age and Sex Mortality Rates
per 100,000
Males
----- age under 1
----- age 1-4

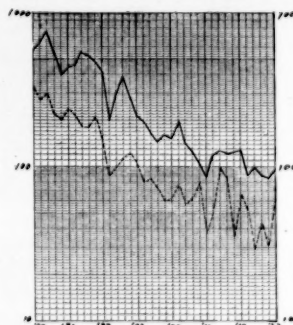


FIGURE 50B
DIPHTHERIA
MASSACHUSETTS, 1887-1922
Specific Age and Sex Mortality Rates
per 100,000
Females
----- age under 1
----- age 1-4

those ages. The curve for age group 5-9 seems to have stopped its uniform rate of decline about eight years before the younger age group. The older age groups having had comparatively few deaths in recent years give scattering points which are without significance.

The proportionate mortality for diphtheria and croup is shown in figures 53 and 54. Infant deaths from that disease have not contributed more than about 1% of the total deaths in infancy. Ages 1-4, on the other hand, have been heavy sufferers. In 1888, 25% of all deaths in that age group were due to diphtheria and croup. This proportion diminished until 1905, and has been stationary at about 10% ever since. Age group under 5 (figure 54) showed peaks in proportionate mortality in 1863 and 1877, just as did the mortality rate. Eighteen per cent. was the high point, which diminished to 3% in 1905, which proportion has held ever since. Age group 5-9, in which a fourth of all diphtheria deaths occurred, was responsible, in 1877, for 52% of all deaths at

Using the reported morbidity figures since 1907 as a basis, the case fatality has varied from 10% to 6.6%—the latter in 1921. Owing to confusion in diagnostic terms and to failure to report all cases, no reliance can be placed on these figures. The year 1900 saw the highest reported number of cases—12,641—and there were 8826 cases reported in 1922.

During the thirty-five-year period from 1876 to 1912 when there was a uniform rate of decline in the mortality rate from diphtheria and croup there were in vogue numerous methods for attempting to obtain control of the disease. For the past century, even, diphtheria together with small pox and scarlet fever have been recognized as diseases dangerous to the public health, and general sanitary measures were directed against them. As early as 1885, children from families in which these diseases existed were excluded from school; and quarantine came to be applied more and more frequently. The conclusions to be drawn from the Massachusetts statistics are that the mor-

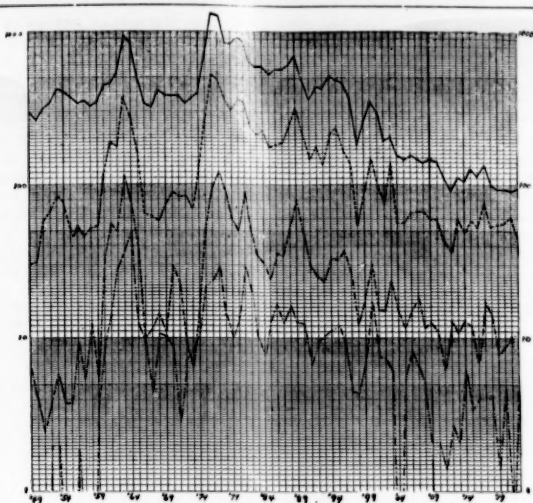


FIGURE 51
DIPHTHERIA
MASSACHUSETTS, 1849-1922
Specific Age and Sex Mortality Rates per 100,000
Males

— age under 5
- - - age 5-9
- · - age 10-14
· · · age 15-19

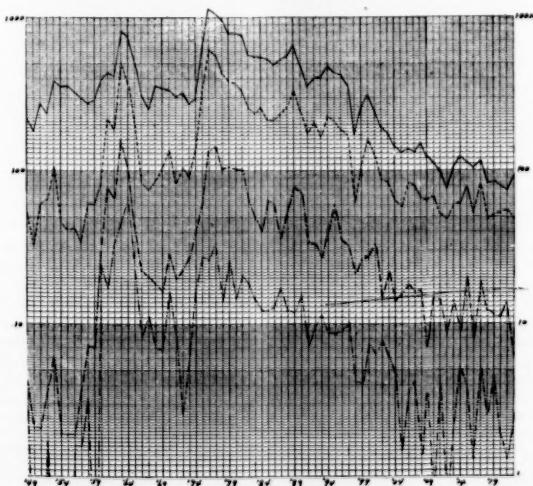


FIGURE 52
DIPHTHERIA
MASSACHUSETTS, 1849-1922
Specific Age and Sex Mortality Rates per 100,000
Females

— age under 5
- - - age 5-9
- · - age 10-14
· · · age 15-19

tality rate has been dropping uniformly ever since 1876; and that this drop has been due to the following causes:

1. General appreciation that the disease was "dangerous to the public health," with resultant growing restrictions to known cases and to contacts.
2. Discovery of the bacillus, followed by increasingly strict quarantine measures.
3. Growing therapeutic use of antitoxin.
4. Prophylactic use of antitoxin.
5. Active immunization.

The two last-named factors have operated more to reduce morbidity than mortality, for the present stasis with its needlessly high mortality rate of about fifteen per hundred thousand is largely due to ignorance and careless-

first few years that antitoxin was in use, but there was no evident effect on morbidity. Park thinks the morbidity in New York City has not decreased over 33% during the same time that the mortality has been reduced 80%, the rate having been 150 in the decade before 1895, and being 22 now.

The source of infection is a diphtheritic lesion in nose, throat, or wound, or the excretions from nose or throat of a carrier. The infection is transmitted by direct and indirect contact, and occasionally by milk. The incubation period is two to five days, and the patient or carrier is potentially dangerous until virulent bacilli are no longer present. The or-

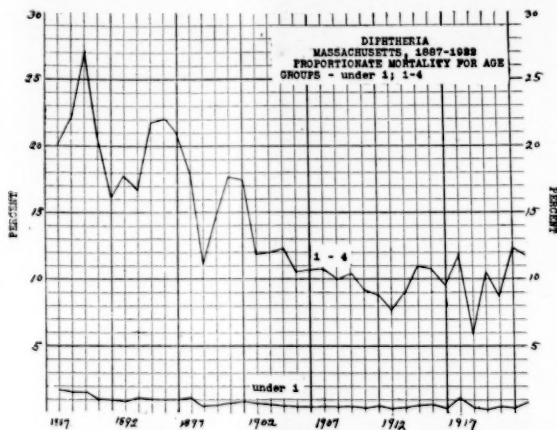


FIGURE 53

ness which must be combated by aggressive educational methods.

Small pox is the only disease which shares with diphtheria the distinction of being entirely controllable, that is, so far as the diseases prevalent in Massachusetts are concerned. And although the procedure for preventing diphtheria is as harmless as vaccination for small pox, it is meeting with much opposition. Similar opposition in attempts to control small pox threatens to result in a non-immune population which will be an easy prey for the virus.

Before the cause of the disease was known diphtheria was generally regarded as a filth disease. The discovery of the bacillus simplified the diagnosis, and control of the disease seemed certain. Each case would be known and isolated and no secondary cases would be possible. But carriers and unrecognized cases were not taken into consideration until it was seen that isolation was not as effective in lowering morbidity as had been expected. There was a marked fall in the death rate during the

ganism lives longer outside the body than the majority of pathogens, so infected objects are dangerous for longer periods of time in this disease than in most others.

The patient should of course be promptly isolated. If home conditions are such that this cannot be done with average efficiency, he should be taken to a hospital. Concurrent disinfection is to be carried out. Then, the correct procedure is to make an examination of, and take cultures from, all contacts in the home and those outside who have been closely associated with the patient, at the same time obtaining record of such data as age and result of previous Schick test. Any who show clinical evidence of diphtheria should be isolated. Any in this group showing positive cultures should also be isolated until the virulence test shows this unnecessary. An immunizing dose of antitoxin should be administered to each of those non-immune contacts who are so situated that medical observation is not easy. It should also be given to those non-immune chil-

children who for one reason or another can not be satisfactorily examined for clinical evidence of the development of diphtheria, but even then only after negative tests for hypersusceptibility. If this latter test is positive, serum, except therapeutically, would not be justified. All those given passive immunity should be kept in isolation until two negative nose and throat cultures, forty-eight hours apart, have been obtained. This will prevent contact carriers infecting others and will also give warning that there is a possibility of the development of clinical diphtheria when, in the course of two or three weeks, the passive immunity has

tion had distracted attention from a possible infection.

4. Hypersusceptibility would have been produced, interfering with later possible therapeutic inoculations.

All contacts who had not previously been given the Schick test, and who did not at once receive a prophylactic dose of serum should be Schicked. Individuals thus shown to be non-immune should be examined daily for evidence of infection, with occasional throat cultures, for five to seven days after the last exposure. If negative cultures are obtained active immunization of children but ordinarily not of

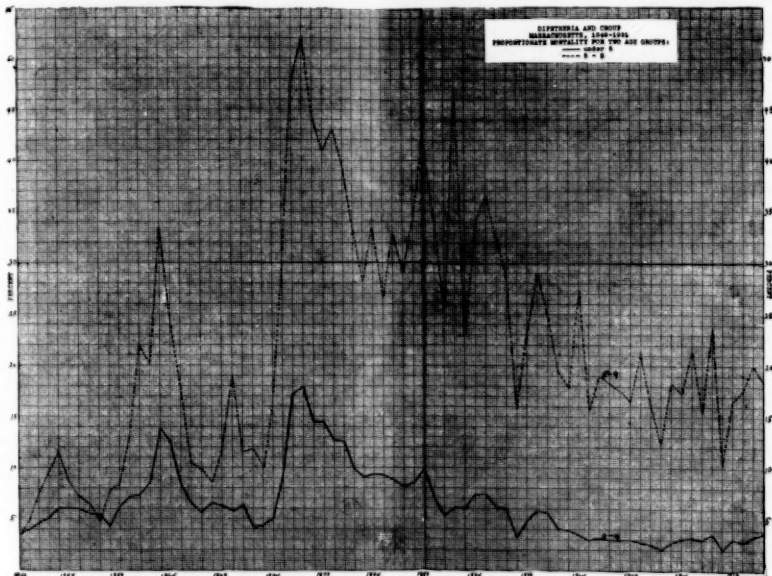


FIGURE 54

disappeared. Passive immunity should be given as little as possible, for several reasons:

1. Antitoxin exists in the blood for varying unknown lengths of time after its administration. Later attempts to produce active immunization would be nullified by the neutralization of the toxin by the antitoxin still present.
2. Natural immunization develops in an unknown way but it is suspected that repeated exposure to the organism in insufficient amounts to produce the disease is a potent factor. If so, passive immunization would prevent the development of natural immunity.
3. Passive immunization having a duration of two or three weeks only, would not prevent the later development of diphtheria if the individual carried the bacilli during the period of passive immunity. Such an infection might well be unrecognized because of possible modification of symptoms and because the passive immuniza-

adults should then be begun. It is known that a certain small proportion of Schick-positive individuals, although they possess no antitoxin in their tissues, have bactericidal bodies which are just as effective in producing immunity. There is no method of determining this condition, consequently all Schick-positives are considered to be susceptible, in order to be on the safe side.

Children who are either naturally or artificially immune and who belong to families where cases of the disease exist need not be excluded from school as is necessary with non-immune contacts. Those non-contacts in school who refuse the Schick test, or if shown by it to be non-immune, refuse antitoxin, might be innocent sufferers, but one case among such

persons would serve as a basis for educational propaganda. Known virulent carriers should of course be excluded from school, for even immunes, if subjected to a massive infection might not be able to resist it. Food handlers should not be allowed to continue at their work unless throat cultures are negative, and they have discontinued living at home until the release of the patient. Any case of the disease in a school-child should be reported by the health department to the school authorities in order that daily examinations of all children in the school for clinical evidence of diphtheria may be made.

Convalescents and contact carriers should be kept in isolation until two successive negative nose and throat cultures at forty-eight hour intervals have been obtained. Carriers may remain such for prolonged periods, and in that event the virulence test should be repeated.

As to general methods for eradicating diphtheria, the way is clear, but, as in small pox, difficult to follow because of increasing opposition. Ninety per cent. of all deaths from diphtheria are in children under ten years of age, but only a fourth of all are over five years of age. Active efforts to immunize school children are essential but since the greatest mortality is in the pre-school age, education must be carried to the home. In this work full advantage should be taken, as in small pox, of the disease itself as an advertising agency for active immunizations. Preliminary Schick tests are not necessary in the pre-school age unless merely as a means of catching the parents' interest. Unless the virulence of the Kiebs Loeffler bacillus diminishes, the present mortality rate which has been maintained for several years can be lowered only by education of the public to the value of universal immunization. Deaths are due largely to failure to administer anti-toxin early enough, or in sufficient amount, and the simplest way to prevent such errors is active immunization. A law to that effect similar to the vaccination law would not solve the problem. What is really needed is immunization very soon after six months of age. A law to that effect would not be enforceable. But an educational campaign directed at the parents of children over six months of age, based on data obtained at birth registration should be effective.

Better reporting of the disease is also to be desired, but as long as parents defer calling a physician, and physicians make incorrect diagnoses, and laboratories make mistakes, and physicians carelessly or otherwise refrain from reporting cases, perfection in this respect will not be attained.

SUMMARY OF CONTROL MEASURES

- Isolation of the patient, with concurrent disinfection.
- Examination of school children if case develops among them.

Clinical examination and cultures of all immediate contacts.

Isolation of positives found in this examination. Virulence test of cultures of these positives.

Passive immunization of contacts where other procedures are not available.

Two successive negative cultures, 48 hours apart, before release of those passively immunized.

Schick test of all contacts not passively immunized. Daily clinical and occasional cultural examinations of Schick positives.

At end of week, active immunization of Schick positives who are clinically negative.

Food handlers to be kept from work unless cultures are negative and they change domiciles away from an infected home.

Daily clinical examinations of school children in the schools, not necessarily by a physician.

(To be continued)

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RESIGNATION OF DR. J. P. MULLER

DR. JOSEPH P. MULLER, who, for the past two years has been a member of the resident staff of Rutland State Sanatorium, will become associated with the Holden group of physicians, as Dermatologist, September 15th.

Dr. Muller graduated at the University of Budapest, Hungary. His internship was at Polyclinic Hospital, Budapest, after which he was, for three years, Dermatologist to that institution, and served, for a period, as Assistant in Dermatology at Elizabeth University.

**Case Records
of the
Massachusetts General Hospital**

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN
WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12351

CARDIAC SYMPTOMS WITH JAUNDICE

MEDICAL DEPARTMENT

A married English-American woman of thirty-eight entered August 11 complaining of swelling of the ankles and attacks of breathlessness of eight months' duration. Her family history was good. She had always been very well and strong and had done all the housework for her husband and nine healthy children, the youngest nine months old. She had "malaria," earaches and nosebleeds* in childhood. At eight years old she had an abscess on the right side of the neck requiring drainage and treatment for thirteen weeks in the Out-Patient Department of this hospital. For years she had sometimes urinated once or twice at night. Until just before her last pregnancy her catamenia were regular.

Eight months ago, two or three weeks after the birth of her ninth child, she had a "cold in her stomach" characterized by chilliness in her stomach. Two weeks later this "cold" spread up to her chest. She shook all over, gasped for breath and felt ill, but had no fever as far as she knew. A physician gave two doses of morphia. In a week her ankles started to swell. She was then put to bed for a week and given four pills of digitalis a day, and continued to take these for two or three weeks after she was up. Since that time she had done very little. It hurt her heart to do work with the left arm. She was awakened at night by attacks in which she had to sit up and gasp for breath. She used two pillows. She usually got out of breath and had palpitation on exertion. Sometimes her heart seemed irregular. Three months ago she had marked dyspnea and some swelling of the ankles and was put to bed again for a week. After getting up she was too active, and eight weeks before admission had a relapse and was in bed again for four weeks. During this time she started taking four digitalis pills a day. The dose was cut to two because the physician thought it was injuring her appetite, which had been very poor lately. She had some discomfort after eating and ate very little. Since the onset

* (side not stated.)

of the illness she had had dry cough with occasional blood streaked sputum. Throughout the illness she had awakened at night with very extreme sweating. She had lost much weight. The only edema was that of the ankles, and disappeared when she lay down. She had felt well through all her pregnancies. She had not menstruated for the past two months, and missed one period earlier. She had had "hot flashes" relieved by pills, and periods of dizziness. She had passed large amounts of urine lately. A week before admission her physician found that she was anemic.

Examination showed an undernourished, very pale woman with a slight cyanotic malar flush, sitting up in bed. Many decayed tooth stumps. Apex impulse of the heart very diffuse. Left border of dullness 9 centimeters from midsternum in the fifth space, one centimeter outside the midclavicular line, right border four centimeters, supracardiac dullness six centimeters. No murmurs. Pulses and arteries normal. Blood pressure 150/120. Electrocardiogram showed ventricular premature beat, rate 125, flat T₂, left axis deviation. Lungs showed moist râles at left base and a few at right base. Liver edge felt well below level of umbilicus, smooth, somewhat tender. A mass in the left upper quadrant 6 centimeters below the costal margin descending with inspiration. No notch felt. Rectal examination: marked external hemorrhoids. Pelvic examination: cervix torn bilaterally. There was pitting edema of the lower legs and feet. The pupils and reflexes were normal.

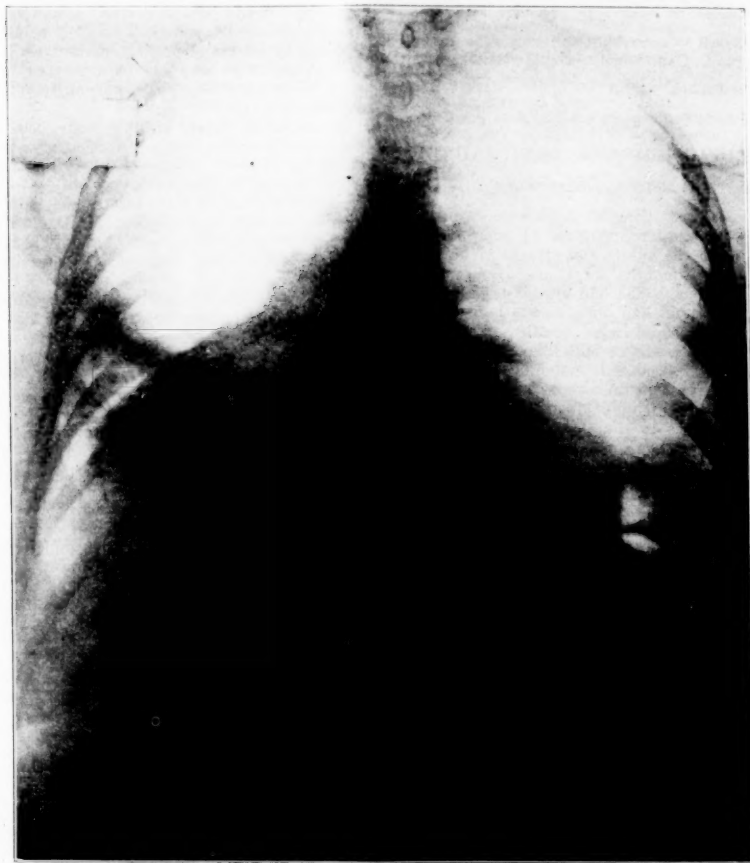
The urine was normal in amount except for diuresis December 15-18, 62 to 90 ounces, and December 24 and 25, 112 to 103 ounces, (novasurol and ammonium chloride); cloudy at thirteen of thirty-nine examinations, dark at one, alkaline at five, the slightest possible trace to a large trace of albumin at twenty-eight, bile at one. Sediment: leucocytes at all but two examinations, many at nine, sediment loaded with leucocytes at nine; red cells at eight. September 24 a catheter specimen was cloudy, specific gravity 1.004, sediment, 6-8 red cells and 2-4 leucocytes per high power field. Urine culture September 25, moderate growth of streptococci. Renal function August 15 45 per cent., September 8 20 per cent., September 24 30 per cent. Blood: leucocytes 9,000-28,000-6,400, polynuclears 69 to 86 per cent., hemoglobin 80 to 65 per cent., reds 5,380,000-4,000,000, slight to moderate achromia, moderate variation in size and shape in two smears; one smear normal. Three blood cultures sterile; one showed Gram-positive spore bearing bacilli. Non-protein nitrogen 40 to 26. Wassermann negative. Stools: guaiac very strongly positive at one of thirteen examinations. (She was not on a meat-free diet.)

The temperature for the first eight weeks ranged from 96.7° to 102° (rectal), for the next five weeks from 97.7° to 101°. For the re-

maining fourteen weeks it was rarely slightly over 100°. The pulse was 70 to 150, the respiration 20-48. The pulse and respiration did not reach normal until considerably later than the temperature.

The pulse showed gallop rhythm at times. By

The left auricle was prominent to percussion. August 31 she was placed on the danger list after a period of extreme faintness, marked sweating and coldness of the extremities. The pulse was very feeble. The blood pressure was 135/125. 200 c.c. of blood was withdrawn from



September 26. A portable X-ray. Shows the heart shadow very much enlarged both to the right and the left with the patient sitting or in the upright position. It is of the water bottle shape. Apparently there is no increase in the supra-cardiac dullness. In the lung fields around the roots and at the base there is diffuse mottled dullness, probably of cardiac origin. The outline of the diaphragm is visible on the right, not made out on the left. An unusual shadow at the left base suggests a bubble of gas.

August 16 the patient had gained eleven pounds—ascites and edema. The dosage of digitalis was increased and fluids were limited. The blood pressure was now 145/110. August 18 a probable middiastolic murmur was heard at the apex.[†]

[†]This was at no time heard by any visiting physician or consultant.

the right arm. After it the blood pressure was 155/120. The patient looked better. There was now a tinge of jaundice beneath the flush. August 24 there was a to-and-fro rub over the sternum which was not present if the breath was held. August 26 right thoracentesis gave 350 c.c. of yellowish red fluid, specific gravity 1.015,

small elastic clot found fairly readily, leucocyte count unsatisfactory, red cells in clumps and masses, no organisms. Culture, no growth. Non-protein nitrogen 19, chlorides 576, sugar 140, total protein 2564. On blood plasma non-protein nitrogen 19, chlorides 520, sugar 140, total protein 6217. Indirect van den Berg test strongly positive, direct van den Bergh negative. Serum dilution 1:40.

September 1 there was a skin eruption on the arms. A dermatologist made a diagnosis of purpura. The hands now swelled rapidly. The leucocyte count was 25,000. September 9 at a right chest tap 5 c.c. of practically pure blood was removed. The purpura was clearing and she began to feel slightly better. Her husband now reported that the onset of the illness was a month after childbirth and that in the interval she was well. Her physician found nothing wrong with her heart before and after childbirth. The white count varied widely from day to day—26,300 September 10, 11,900 September 12, 28,000 September 16, 18,500 September 18. September 23 both chests were full of fine crackling râles. There was some evidence of increasing fluid at the left base. The edema of the legs was out of proportion to that elsewhere.

September 24 a portable X-ray showed the heart shadow very much enlarged both to the right and the left with the patient sitting or in the upright position. It was of the water bottle shape. On account of the patient's condition it was impossible to get a plate in the prone position. Apparently there was no increase in the supracardiac dullness. In the lung fields around the roots and at the base there was diffuse mottled dullness, probably of cardiac origin. The outline of the diaphragm was visible on the right, not made out on the left. An unusual shadow at the left base suggested a bubble of gas.

September 29 a pericardial tap was attempted in the fourth space 5 centimeters from the midline with the needle inclined toward the sternum. It was inserted at least 5 centimeters deep through two definite obstructions beneath the skin. No fluid or blood could be found. The apex thrust was not felt by the needle, but it was not considered safe to go deeper. There was no apparent discomfort to the patient. October 8 Alpine lamp treatment was producing good erythema. A week later there was a very slight general change for the better. By the 19th however there was marked edema of the hands. The fluid in the chest was increasing and the patient looked worse. October 22 the heart was rapid and regular, with a loud third sound and a short middiastolic at the apex. There was free fluid in the right chest. Râles were heard at both bases. Marked ascites made abdominal palpation impossible. There was edema of the hands and marked edema of the legs. The jaundice had disappeared. October 27 there was a good

diuresis from novasurol and ammonium chloride. The gums became inflamed and the novasurol was discontinued. November 4 she was beginning to have pain from the distended abdomen. The thickness of the abdominal wall made paracentesis difficult. A tap was attempted in two places November 5; no fluid was obtained. There was oozing from the punctures. November 9 there was great edema of the left arm. She complained of a feeling of pressure in the bladder. By the 24th she was very helpless on account of the edema. December 4 there was pain in the left shoulder, and the left external jugular was thrombosed. December 15 there was retention of urine. Twenty-eight ounces was obtained by catheter. Novasurol with ammonium chloride was again tried and gave a very satisfactory diuresis, after which she was much more comfortable and the abdomen became much smaller. At the end of two weeks the edema was nearly gone except from the feet. The patient had a ravenous appetite and looked well. No ill effects were now noted from the novasurol. By January 4 there was no evidence of fluid in the chest. February 5 she was doing fairly well up in a chair, and was discharged.

After going home she was fairly well for two months. She took one pill of digitalis a day from the time of discharge and had no toxic symptoms. Two weeks after leaving the hospital her physician gave her ammonium chloride for five days and novasurol for a period of ten days, two or three doses being given, and obtained a diuresis. A week later a similar procedure gave an even better diuresis. The middle of March ammonium chloride was tried a third time, but had to be discontinued because of nausea. The edema however practically disappeared. The patient stayed in bed and was given massage of the legs daily.

April 6 she felt feverish and sick and had a cold with thick sputum and discharge from the nose. Her physician found fever and gave morphia for the cough at night. She had dull ache in the left shoulder and a slightly painful tug on her heart when she coughed. She had noticed both of these pains before the onset of the present exacerbation. During the following week she became more dyspneic. She distinguished her "grippe cough" from her "heart cough," which was slight before the grippe came on.

April 14 she reentered the hospital. Examination showed her poorly nourished, propped up in bed, dyspneic and orthopneic but not cyanotic. There was moderate jaundice of the skin and mucous membranes. The pharynx was deeply congested and covered with a mucopurulent discharge. The nasal septum showed a large perforation. The respirations were rapid and shallow. The diaphragm excursion was limited on both sides. The percussion note anteriorly was essentially unchanged, but posteriorly from the level of the eighth dorsal spine

the note was dull. All over the chest the breath sounds were harsh and many coarse moist bubbling râles were heard anteriorly and posteriorly, especially numerous over the bases. No definite free fluid could be made out in either pleural cavity. The heart was not enlarged. No definite murmurs were heard and no thrills felt. The rate was somewhat increased, with an occasional extrasystole. The blood pressure was 100/80. The abdominal wall was boggy and the lower half was pendulous and showed some excoriations. There was perhaps some free fluid present. The liver edge was just palpable. The spleen was not distinctly felt. There was some brawny indurative edema of the legs and sacrum.

Urine dark brown, specific gravity 1.022, a large trace of albumin, much bile, sediment, 5 red blood cells and 20-25 leucocytes in clumps per high power field and an occasional cellular cast; loaded with epithelial cells. Blood: leucocytes 31,500, polynuclears 92 per cent., hemoglobin 90 per cent., reds 5,600,000, smear normal.

The temperature was 99° to 100.2°, the pulse 89 to 125, the respiration 25-31.

The patient failed rapidly. Digifolin and caffeine sodium salicylate gave only temporary relief. The heart rapidly dilated. There was a loud apical systolic murmur and a rate of 180 (?). April 15 she died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

1. With swelling of the ankles and breathlessness, heart disease naturally comes to mind.

2. The illness at eight years would make us think of the possibility of tuberculous glands or of non-tuberculous septic glands such as might have started in sore throats or dental troubles.

3. A PHYSICIAN: Why should it hurt her heart to use her left arm?

DR. CABOT: I don't see why it should. That is not an ordinary heart symptom at all. They can use the left arm as well as the right or the leg or any other part of the body.

4. The cough and sputum were probably accounted for on the basis of a heart trouble for which she was being treated.

5. Extreme sweating of course cannot be due to chronic rheumatic valvular trouble or hypertensive heart trouble or syphilitic heart trouble. We must consider some acute infection in the heart or elsewhere. Acute endocarditis is the thing most in my mind so far.

NOTES ON THE PHYSICAL EXAMINATION

1. This examination suggests a slight enlargement of the heart, not a marked enlargement. It is a surprise to have no murmurs. The main

point of the electrocardiogram is a big left ventricle suggested by the left axis deviation.

2. This abdominal mass is just where the spleen ought to be, and they evidently thought so, because they noted that no notch was felt. It is of course what we are looking for, but we do not need to get a notch unless the organ is bigger than it is here.

3. What have we so far? A high blood pressure, some evidence of failing compensation on the part of the heart, and nothing else. So far as diagnosis is concerned the only leads we have point to a hypertensive heart trouble.

4. The râles were due to passive congestion, I suppose.

5. At her age, thirty-eight, we are thinking of kidney trouble associated with such a hypertension.

She was taking drugs which might have an effect on the output of urine. Were there no casts?

MISS PAINTER: Rare to numerous hyalin and granular casts were noted at only six examinations.

DR. CABOT: So the casts vary from none at all to numerous, most of the time none at all. These are all good renal functions, the kind we do not expect with any nephritis. We are going to have a hard job to make a diagnosis of nephritis.

6. Four million reds is certainly anemia.

7. Spore-bearing bacilli means nothing. It is contamination.

8. She was not on a meat-free diet, so one positive guaiac means nothing.

9. This is a pretty long fever, up and down. But the temperature is essentially normal for the last part of the time, so whatever cause for fever there was seems to have died out before death.

10. A PHYSICIAN: Was that gain in weight in just the five days after she came in, or a year later?

DR. CABOT: No, only five days. She has gained pretty fast.

11. The blood pressure is still bad.

12. This is an extremely small pulse pressure.

13. The to-and-fro rub over the sternum was not pericardial if this note is correct.

14. There are no organisms, no growth, but nevertheless empyema on the left.

15. Apparently we have a hemolytic type of jaundice present. The indirect van den Bergh goes with the hemolytic type of jaundice, which would all point towards some septic process going on in addition to whatever is the cause of that hypertension. Of course the empyema shows the same thing.

16. The purpura presumably is embolic, presumably is evidence of a heart process, though we have not any other signs of it yet.

17. Apparently the X-ray man thinks this

is a pericardial effusion. Dr. Camp, will you be good enough to demonstrate these plates to us?

Dr. CAMP: The cardiac shadow is distinctly enlarged both to the right and the left. We have mentioned the water-bottle shape which we always associate with pericarditis with effusion. As a matter of fact, the differential diagnosis between a large and dilated heart and pericarditis with effusion, while it would seem easy to make, is actually very difficult, and the diagnosis really hinges largely on the ability to show the difference in the width of the supracardiac shadow in the upright and recumbent positions. We have no plates made in the prone position, and consequently so far as X-ray is concerned we cannot make the diagnosis.

There are other signs. In the first place the heart with pericarditis with effusion is apt to have a flattened outline. Its rounded borders are flattened out as the fluid tends to accumulate. Another sign frequently mentioned in the older books in the last few years has been shown to be incorrect,—that is, the obliteration of the cardiohepatic angle. As a matter of fact the cardiohepatic angle does not become obliterated so far as X-ray is concerned in pericarditis with effusion.

Then again it is possible to have as much as 200 to 250 cubic centimeters of fluid within the pericardium and have no X-ray signs by fluid. So that, so far as we are concerned, we have to say we cannot make a positive diagnosis of pericarditis with effusion in this case. The heart is apparently enlarged, the borders are a little bit rounder than we usually see, and if I had to guess I should guess that this was probably dilatation and not effusion.

Dr. CABOT: I should guess the other way. I have never seen a plate like that which post mortem was shown to be due to the heart alone.

A PHYSICIAN: To what is the dullness due that we get there? Dr. Camp says the X-ray does not show that it is filled up.

Dr. CABOT: What might this be due to other than effusion—just to a big heart?

A PHYSICIAN: What is the dullness we get on percussion?

Dr. CABOT: Due to the heart itself. That is what Dr. Camp thought.

Have we any evidence as to which side the pericardial tap was on? My guess is that it was the right side. I have seen the heart tapped a great many times without any harm, but it is not a thing we care to do.

Whether the lamp treatment produced anything good beside the erythema is not stated.

A PHYSICIAN: What is novasurol?

Dr. CABOT: That is a drug I have never used. I believe it is a mercurial preparation something like calomel.

Her discharge is unexpected. Let us speculate what diagnosis she had on the book when she was discharged. I should suppose she had a

diagnosis of mitral stenosis with intracardiac clots either on the valves or elsewhere, with a pericardial effusion I believe, which probably was absorbed, with one perfectly definite embolism in the earotid, with presumably emboli in the skin, all of which seems to show a malignant endocarditis. If it was not malignant endocarditis I don't know what it was. The fact that she got temporarily better does not rule it out, though I had no idea she was going to get even temporarily better. I thought it was going on from bad to worse.

A PHYSICIAN: Wouldn't that blood pressure suggest also some aortic stenosis?

Dr. CABOT: The big diastolic pressure would not; the small pulse pressure would. I had forgotten that for the moment. What are we going to make out of that high diastolic pressure? So far as I see we have to say there is either a kidney trouble, or possibly a primary hypertension with some secondary infection of the heart. My guess is they said primary hypertension, secondary infection of the heart, and multiple emboli. Now we have a perfect right to know the ward diagnosis. What was the diagnosis at the first discharge?

MISS PAINTER: Mediastinopericarditis, chronic, with cirrhosis of the liver.

Dr. CABOT: That is pericarditis with adhesions outside as well as inside the pericardium. The last because there was so much ascitic fluid and because that often goes with chronic pericarditis.

They were giving one ampule of novasurol, which contains 1.2 cubic centimeter, intramuscularly about six days apart.

Dr. RICHARDSON: Do I understand that she was discharged with a thrombus the size described there?

Dr. CABOT: She certainly was discharged, and I do not think the diagnosis written there will fit all the facts. Certainly mediastinitis and pericarditis will not account for such a high diastolic pressure. We have to suppose some hypertension. It will not account for the purpura that she has had, it will not account for the hemolytic jaundice that she has had. We have to suppose something more.

Perforation of the nasal septum we ordinarily think of as syphilis. It may however also be due to a septic process.

DIFFERENTIAL DIAGNOSIS

Here is a very puzzling patient certainly. I have no considerable confidence that we shall hit it right. We have had a jaundice off and on. We have had an enlarged spleen at one time, and we have had evidence that this jaundice was of the hemolytic type. Is it possible that she has had a congenital hemolytic jaundice? I think not. I think she certainly would have said something more about it previous to this illness.

A PHYSICIAN: They got blood at one time

from puncture of the lung. It might be a malignant lung.

DR. CABOT: Of course we don't intend to puncture the lung, but whenever we do we get blood,—I mean from the normal lung. So I should not think that was evidence of neoplasm. Nothing was shown by the X-ray that would suggest it in any way.

She certainly had a heart lesion. She certainly had something that gave her passive congestion, and I am entirely confident that she had a pericardial effusion or hydropericardium. Dr. Camp knows more than I do. He did not think so. If she did, then it would be perfectly natural that there should be pericardial adhesions afterwards, and interference with the action of the heart from those. A middiastolic murmur ordinarily means mitral stenosis. That cannot be the whole diagnosis, but it might be a part of it. I should certainly suppose that at one time she had had an acute endocarditis. We do not expect acute endocarditis in an adult to get better. She never had a blood culture positive. So perhaps she did not have it. But I cannot get over the feeling that she had.

She certainly had a lot of emboli, which we must suppose were most of them bland. The one that started up that empyema we must suppose was septic, unless we suppose empyema of a perfectly separate origin. The one in the carotid must have been bland or she would not have been with us as long as she was.

She does not get anemia, which is hard for me to explain on any hypothesis. With a hemolytic jaundice and evidence of a septic process in the blood she ought to get anemia, and I do not know why not. It is incompatible with any diagnosis that I can make.

Did she have cirrhosis of the liver? It is perfectly possible,—the Pick's type that goes with pericarditis. Why did she have so high a blood pressure? I don't know. I have to suppose she had a hypertrophied and dilated heart depending on a primary hypertension, and that the hypertension went down at the end, perhaps because the heart was failing. I have never seen a normal heart with such a blood pressure as this.

What does it sum up to? A hypertrophied and dilated heart, chronic pericarditis with adhesions. I do not believe there is any kidney lesion. I should suppose there had been an acute process on the valves, and what became of it in the end I do not know. There should be evidence of that empyema in a pleural thickening and adhesions on the left. I think that is as far as I can go.

A PHYSICIAN: Could she have had a subphrenic infection from parturition?

DR. CABOT: Yes, it is perfectly conceivable that some infection might have remained after labor.

A PHYSICIAN: How about abdominal malignancy?

DR. CABOT: The X-ray does not show it, and we had a pretty good X-ray. Nothing has been felt, although of course they had a poor chance to feel anything through the abdominal wall. I think there is more chance of malignancy than there is of metastases. But then we could not account for all the heart symptoms, and we must account for them.

A PHYSICIAN: Is it possible that this is acute or subacute endocarditis, or did this history last too long?

DR. CABOT: She had no right to have the fever go and feel as well as she did with acute or subacute endocarditis.

A PHYSICIAN: How about an aneurysm of the aorta?

DR. CABOT: That we thought we had ruled out.

A PHYSICIAN: Could there be syphilis in the heart?

DR. CABOT: You mean syphilitic aortitis? I do not see that we have any evidence of it.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic mediastinopericarditis.
Cirrhosis of the liver.
Acute myocardial failure.

DR. RICHARD C. CABOT'S DIAGNOSIS

Primary hypertension.
Hypertrophy and dilatation of the heart.
Chronic pericarditis with adhesions.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*
Hypertrophy and dilatation (of the hypertensive type.)
2. *Secondary or terminal lesions*
Chronic passive congestion, general.
Hydropericardium.
Ascites.
Edema of the lower extremities.
Slight icterus.
3. *Historical landmarks*
Extensive chronic pleuritis.

DR. RICHARDSON: The abdomen was distended, the wall soft, and the peritoneal cavity contained at least 2500 cubic centimeters of thin clear straw-colored fluid. The skin showed slight icterus. The gastro-intestinal tract showed well marked chronic passive congestion.

The liver was nine centimeters below the costal border. The diaphragm on the right was at the fifth rib, on the left at the sixth rib.

There was no fluid in the pleural cavities. The cavities were obliterated by dense old adhesions.

These of course extended to the outer surface of the pericardium, but inwardly the pericardium was negative except that it contained 200 cubic centimeters of thin clear fluid.

Dr. CABOT: That is, just hydropericardium.

Dr. RICHARDSON: Yes. The lungs showed well marked chronic passive congestion, nothing else.

The heart weighed 400 grams,—considerably enlarged for her. Microscopic examination of the myocardium was negative. There was slight dilatation on the left, considerable on the right. The valves, the coronaries, the aorta and great branches were frankly negative. All we have is a hypertrophied and dilated heart.

The liver, the spleen and the kidneys showed chronic passive congestion.

A PHYSICIAN: How do you account for the sudden change in the blood pressure?

Dr. CABOT: I suppose we have to say the heart is giving out so near the end.

CASE 12352

TRANSIENT PERIODS OF NUMBNESS PSYCHONEUROTIC OR ORGANIC?

NEUROLOGICAL DEPARTMENT

An American wool sorter twenty-four years old entered the hospital on June 19, 1926, complaining chiefly of weakness and numbness of both legs, more marked on the left.

His family history was essentially negative.

He had always been well until October 1922, when he was twenty years old. At this time he began to have attacks lasting a few seconds to a few minutes in which his right side, including his face, became numb, and his vision became blurred or there was diplopia and dizziness. These attacks occurred several or many times daily and were almost always induced by anything which startled him. At times, however, they occurred when he was talking or reading quietly. The diplopia never lasted more than a few minutes, but at times the numbness lasted several hours. At this time he was seen and examined in the Out-Patient Department, where no abnormalities were found in the examination of the reactions of the cranial nerves and tendon reflexes. The abdominal and plantar reflexes were not tested. Examination of the eyes at the Eye and Ear Infirmary was also negative. No evidence was elicited of any factors causing nervous strain or worry, but a tentative diagnosis of psychoneurosis was made. After occurring periodically for a few months, these attacks completely disappeared and the patient was comparatively well for a period of several months.

In June 1923 he had a spell of severe headache with left sided numbness lasting a few minutes, and later headache with transient diplopia. Examination in the Out-Patient De-

partment showed no evidence of "toxic or organic disease." The question of migraine was raised. At this time the patient was under nervous strain, as his wife was pregnant.

Since that time there had been three periods of illness in which he had had transitory attacks of right sided numbness, diplopia and inability to speak, lasting only a few seconds to a minute or two. He was always very "dizzy" when the diplopia occurred. At times there was marked weakness, tremor and stiffness of the right side. There were periods in which he had difficulty in voiding. During these periods of illness there was always marked constipation and at times difficulty in controlling the anal sphincter. There was no urinary incontinence, but rectal incontinence occasionally occurred.

Two of these periods of illness came to an abrupt end after he began to take medicine prescribed by a local physician, but the medicine had no effect on the last attack. Between the periods of illness he had been comparatively well. He did not have to stop working at any time.

The present period of illness began in December 1925 with transitory attacks of diplopia and inability to speak unassociated with numbness or weakness. The difficulty in speech consisted in an inability to utter words. He could utter sounds and make signs to indicate that he could not talk. At times he had jumbled up his words or used the wrong word, but there had been no history of scanning speech at any time. In March 1926 he began to have weakness and later numbness in both thighs, legs and feet. There was also at times tremor of the hands, so that he was unable to write or properly feed himself. During the past week the numbness in his legs had disappeared, but there had been marked weakness and ataxia. He had had no diplopia for three weeks, but blurred vision had occurred when he looked to the left. There had been no headache or vomiting during the present attack. There had been dysmetria at times.

Physical examination. A well developed and poorly nourished young man who looked about eighteen rather than twenty-four. He walked in an uncertain and insecure way, with his feet widely separated. His speech was not definitely scanning or abnormal. His memory was poor, particularly for things that happened more than a year ago. The pupils were equal and circular and reacted normally to light and accommodation. There was spontaneous horizontal nystagmus, accentuated on fixation to right or left, and vertical nystagmus on fixation upwards. Tests of the cranial nerves showed no abnormality. There was very slight intention tremor on finger-to-nose test and considerable intention tremor on heel-to-knee test on each side. There was no weakness or disturbance of sensation in either arm or hand. The tendon reflexes of the elbows and wrists did not appear

accentuated and were equal on each side. The sense of position appeared normal in each hand out slightly impaired in each foot. There was no astereognosis or adiadokokinesis. The epigastric, abdominal and cremasteric reflexes were absent. The knee jerks and ankle jerks were abnormally active and equal. The plantar response was extensor on each side. No ankle clonus could be elicited. There was no disturbance in sensation to light touch, and the patient could discriminate between pointed and dull or hot or cold objects. The Romberg was positive. There was considerable diffuse weakness of the legs. No atrophy or fibrillation was anywhere observed. There was slight tremor and uncertainty in writing. Examination of the throat, heart, lungs and abdomen was negative.

The urine is not recorded. Blood examination showed 7,350 leucocytes, 61 per cent. polynuclears, hemoglobin 80 per cent., reds 4,656,000, smear normal. Lumbar puncture June 18 gave clear colorless fluid, initial pressure 150, combined jugular pressure 380, return 115, pressure after the withdrawal of the first 5 cubic centimeters 60, after the second 5 cubic centimeters 50, pulse oscillations and respiratory oscillations normal, cell count 20, alcohol and ammonium sulphate positive, goldsol 2223222100, total protein 44, Wassermann negative.

X-ray June 21. The calvarium appeared normal. The sella turcica was normal. The frontal sinuses, ethmoid cells, maxillary antra and sphenoid sinuses were normal. No apical foci of infection.

The fundi were negative. Eye muscles, $1\frac{1}{2}^{\circ}$ esophoria for twenty feet. No hyperphoria. Fields of vision normal.

June 25 he had diarrhea with movements oftener than once an hour. June 27 the bowels were constipated, though he drank more water than previously. He usually had desire to defecate, but became unable to do so when on the stool. Numbness in the lower abdomen, which had been present ever since the onset of the illness four years ago, had disappeared spontaneously since admission.

DISCUSSION

BY G. COLKET CANER, M.D.

Having reviewed the entire case record it seems that the evidence is **overwhelmingly in favor of one diagnosis, that of multiple sclerosis.** The multiple and diverse symptoms point unmistakably to multiple lesions of the central nervous system and cannot be explained on any other basis. Such multiple lesions might occur in syphilis or multiple tumors, but the history, together with the spinal fluid examination, seems definitely to rule out either of these diagnoses.

Although remissions frequently occur in syphilis, it is very unusual for any remissions as pronounced and prolonged as these to occur, and it would be rare for symptoms to be as transient in

syphilis as they were in this case. In fact the symptoms were unusually transient even for a case of multiple sclerosis. It is, of course, a very marked characteristic of multiple sclerosis that symptoms may occur for a few days, then disappear, and perhaps recur in another guise. But I have not seen reports of any cases in which they lasted only a few seconds or minutes. They almost always last at least hours, usually days or weeks.

It seems to me that the chief interest in this case lies in its onset. We see that in the Out-Patient Department the diagnosis of psychoneurosis was made. At that time the symptoms were attacks of numbness of the right side, with either blurred vision, or diplopia accompanied by dizziness. I suppose that the diagnosis was based on the very transient nature of the symptoms, the fact that the symptoms occurred when anything startled the patient, and the fact that the physical examination was negative. However, one of these symptoms, diplopia, is a very unusual one in the psychoneuroses. Whenever we have diplopia we do not like to make a diagnosis of hysteria. I believe that diplopia as well as almost any other symptom can be of hysterical nature if there is anything which suggests sufficiently strongly the occurrence of such a symptom in a hysterical person. But if diplopia were hysterical one would be likely to find that a friend of the patient had died of brain tumor and that the patient was afraid of brain tumor, or some such story.

The fact that the symptoms occurred when the patient was startled is partially neutralized by the fact that they apparently occurred also when the patient was quiet, so that that evidence in favor of psychoneurosis should not be regarded as very strong. It is true that in any psychoneurosis symptoms will occur when there is nothing to excite the patient, but if they do occur at such times one can usually find that something has been going on in the mind of the patient to account for their occurrence.

The physical examination done at the Out-Patient Department was negative, but it was unfortunately incomplete. That merely accentuates the importance, when multiple sclerosis is suspected, of doing very complete and repeated examinations, because the physical signs may be very transitory. The abdominal reflexes may be absent on one day and present the next, and the Babinski reaction and nystagmus may also be transient.

Another important point is the fact that examination at that time failed to show any factors causing nervous strain or worry. Now I think that one should be very hesitant of making a diagnosis of psychoneurosis unless some etiology for the neurotic symptoms can be found, because a psychoneurosis is a reaction to some difficulty in life which the patient cannot face. One should be able to discover such a dif-

fiently before making a diagnosis of psychoneurosis, and even then one should not jump at the conclusion that it is the cause of the symptoms.

In a subsequent part of the record it is mentioned that the patient had headache, numbness, diplopia, and difficulty in speech, and the question of migraine is considered. It is true that in the symptom complex labelled migraine diplopia, numbness, and aphasia can occur with or without headache, but migraine does not recur so frequently as the symptoms did in this case, and when it does occur it lasts longer. I think migraine could have been ruled out on that basis even at the onset of the disease. One must also bear in mind that migraine may be caused by multiple sclerosis or other organic disease.

The weakness and stiffness which developed toward the latter part of his illness might have been caused by involvement of the pyramidal tract or of the basal nuclei. We note that the weakness and stiffness first appeared in his right side, then disappeared and returned in both thighs, legs and feet, accompanied by numbness. This is rather a typical history for multiple sclerosis. If the basal nuclei had been involved we should expect a characteristic Parkinsonian attitude and tremor to have been present, and there would have been no numbness. The Babinski reaction indicates that the pyramidal tracts were interrupted, and the weakness and stiffness are adequately explained by that alone.

The description of the difficulty in speech is rather characteristic of a motor aphasia and would make us expect a lesion in the posterior part of the third frontal convolution on the left. The dysmetria points to lesions in the cerebellum. Thus multiple lesions must have been present.

He did not show the scanning speech so typical of multiple sclerosis, nor did we get any history of it; but nystagmus and intention tremor were present. His spinal fluid was characteristic of that seen in multiple sclerosis,—the cell count and total protein were slightly increased, and the goldsol showed a curve frequently seen in this disease.

Thus at the time of his last entry the evidence was conclusive in favor of multiple sclerosis, but when the patient first presented himself at the Out-Patient Department the diagnosis was not at all obvious. A great many cases of multiple sclerosis with transient numbness or weakness disappearing within a few days or weeks go unrecognized. This case is useful in emphasizing how frequently mistakes may be made. At the present time, without any real treatment for multiple sclerosis, such mistakes are perhaps not so serious; but if we do find any treatment in future it will be important to recognize the disease at the earliest possible time.

DIAGNOSIS

Multiple sclerosis.

CASE 12353

CRUSHED TRUNK, CRUSHED PELVIS, CRUSHED HAND; RECOVERY

SURGICAL DEPARTMENT

An American brakeman thirty-eight years old was brought to the Emergency Ward October 28 an hour after being caught between two railway cars. He was in profound shock. He was put on the shock table and given 1,000 cubic centimeters of ten per cent. glucose intravenously and 30 units of insulin. He showed marked pallor and was in great pain. The pulse was very fast and thready. The skin had been scraped from the right flank and the tissues badly contused. In this region there was a soft tumor the size of a cantaloupe, apparently in the deep tissues. The crest of the right ilium had been broken off, was freely movable and slightly displaced downward and inward. Crepitus was obtained. There was general tenderness throughout the abdomen and in the costovertebral angles, most marked on the left. No distention. No obliteration of liver dullness. The skin of the right hand had been almost all torn away. The thumb and little finger had been amputated by the trauma through the proximal phalanges. The other fingers were torn away at the metacarpophalangeal joints. Rectal examination discovered the pelves and ischia apparently intact. Catheterization gave bloody urine.

X-ray taken by portable machine with the patient still on the shock table confirmed the fracture of the crest of the right ilium with wide displacement, and showed the other pelvic bones intact. A lateral view of the abdomen showed a large rounded accumulation of gas in the upper anterior abdominal cavity which was interpreted "probably free gas."

The patient was seen in consultation by a urologist. Catheterization gave about four hundred cubic centimeters of clear urine. Injury to the bladder seemed unlikely; injury to the right kidney likely.

After being personally watched for two hours and a half on the shock table with frequent observations of blood pressure and pulse, there seemed to be definite spasm in the left upper quadrant of the abdomen. The patient began to vomit. It was decided to do an exploratory laparotomy under novocain, and to deal with the injured hand under ethylene if the patient's condition warranted.

The patient rallied very well, was given alkaline water by mouth and glucose subpectorally.

The following day his condition warranted cystoscopy and urethral catheterization in bed. There was no evidence of bladder trauma. The catheters passed easily to each kidney with slow but normal equal flow of clear urine. Sediment of urine from the left kidney showed 70-80 red

blood corpuscles and 70-80 leucocytes, a few colon-like bacilli; culture sterile. Urine from the right kidney showed 4-6 epithelial cells, 30-40 red blood corpuscles, occasional leucocytes and a few colon-like bacilli. Culture showed a few staphylococci.

By October 31 the swelling in the flank had extended into the back and several hundred cubic centimeters of bloody fluid was aspirated. Chemical examination failed to show the presence of urine.

The patient improved rapidly and by November 3 was apparently out of danger. On November 4 the fluctuant area over the sacrum was again aspirated.

The hand was now in a cock-up splint. Dakin's treatment had been discontinued and wet saline dressings were being used. On November 10 the temperature rose to 104°, pulse 120, accompanied by severe occipital headache and vomiting. The lungs showed slight dullness and distant breath sounds at the right base. The patient was very drowsy. A medical consultant found nothing definite in the chest, although it was not possible to exclude a central pneumonia. Portable X-ray showed no areas suggesting consolidation or infarct. There were a few calcified glands at each lung root and some thickening of the larger lung markings. The hematoma of the back was again aspirated. The smear showed intra- and extracellular streptococci. A blood culture showed staphylococcus albus in one flask, no growth in the other.

On November 14 it was decided to make small openings in the massive hematoma and institute Dakin's treatment.

Another blood culture was sterile. The temperature came to normal in three days. This infection of the hematoma had occurred through the sloughing of crushed and abraded tissues in the right flank described on the first examination. The wound was also breaking down in the outer part of the right groin, threatening to expose the body of the right ilium where the crestal fragment had been broken off.

November 20. Drainage from the wounds of the back was now very slight. Portable X-rays of the pelvis showed a fracture of the crest of the ilium with downward displacement. The bone about the upper portion of the ilium had a mottled appearance with areas of diminished density suggesting bone destruction.

The temperature was again normal on November 24 and the patient had made continued improvement. The Dakin's tubes were removed from the wounds of the back, which were granulating rapidly. The ilium now protruded through the wound, but was covered by granulation tissue. The hand had continued to granulate well. It was frequently taken off the splint to permit active motion of the thumb and little finger stumps. The protruding head of the third metacarpal bone had been removed. Dress-

ings had been done in alternating periods of salt solution and Dakin's solution.

December 17 under novocain anesthesia three small Tiersch grafts were applied to the granulating area on the back of the hand and the area over the iliac spine. The hand grafts took well. The iliac grafts did not take. January 1 the patient was walking about the ward. January 12 X-rays of the hand showed a considerable amount of atrophy of disuse. There was a small localized area of infection in the third metacarpal bone. January 16 under local anesthesia this area was curetted and another grafting in the iliac region attempted. These grafts also did not take.

January 26 the patient was discharged feeling well and walking without difficulty. The hand was entirely covered with skin except for a small granulating area over the end of the fourth metacarpal. The right groin showed a granulating wound three by two centimeters. There was also a granulating area one and a half centimeter in diameter on the back above the sacrum at the site of one of the drainage wounds.

DISCUSSION

BY TORR WAGNER HARMER, M.D.

Whenever I look at this man I think that under the divine will he is alive today because of perfect cooperation. The actors were himself—he had wonderful fortitude,—the nurses, who showed great devotion and skill, the house officers, who were very conscientious, and I. At entrance there was a picture of multiple injuries, some very evident, probably others not so evident. The case presents a number of questions for consideration:—

1. Combatting of pain.

2. Combatting of profound shock. Besides morphia, he was given 1000 cubic centimeters of glucose intravenously and thirty units of insulin. We followed the technic of Fisher and Mensing, who had recently published an article in the Boston Medical and Surgical Journal, October 15, 1925. The fluid was run in slowly (90 minutes). After one third had been given, fifteen units of insulin were given. After the remainder of the glucose solution had been given another 15 units of insulin were given. Frequent blood pressure and pulse determinations for a period of two hours and a half while he was on the shock table suggested that it was helpful.

3. The determination of integrity of or injury to the urinary tract. It was evident that the crest of the right ilium had been fractured and markedly displaced. Rectal examination seemed to show that the bones of the true pelvis were intact. Catheterization, however, gave bloody urine. We did not know whether or not the bladder was full at the time of injury. It

seemed more probable that the damage to the urinary tract was above the bladder. The extensive contusion and hematoma in the right flank was consistent with the diagnosis of contusion or fracture of the kidney. The X-ray on the shock table showed extensive fracture of the crest of the right ilium but no other damage to the pelvic bones. When seen by a urologist, catheterization gave a pint of clear urine. He believed that the bladder was probably intact but the right kidney was probably contused or fractured. There might still be present some intra-abdominal injury of a more serious nature.

4. Determination of integrity of or injury to abdominal viscera. The right lower quadrant of the abdominal wall and the right flank had been badly contused. There was no distention. There was no obliteration of liver-dullness. Palpation and percussion of the abdomen failed to give positive evidence of intra-abdominal injury. When the portable X-ray of the pelvis had been taken with the patient still on the shock table a lateral view of the abdomen was also made and immediately developed. If there was rupture of a hollow viscus, free gas might be demonstrated intraperitoneally beneath the anterior abdominal wall. The film showed a large rounded accumulation of gas in the upper anterior abdominal cavity, and this was interpreted "probable free gas." Nevertheless, although the trauma was adequate, in the absence of true muscle spasm, distention, obliterated liver dullness and vomiting, it seemed that this "rounded accumulation of gas" might be gas within the transverse colon. Upon consultation with the radiologist it was decided that this interpretation was plausible. The man was therefore retained on the shock table under personal observation.

5. The decision to perform an exploratory laparotomy under local anesthesia. After two hours and a half the patient began vomiting, and it seemed as though there was definite muscle spasm in the left upper quadrant of the abdomen. There was still no distention, no obliteration of liver dullness, no dullness in the flanks. The condition of the blood pressure and the pulse was somewhat better than on admission. With the beginning of vomiting and muscle spasm intra-abdominal injury was not certain, but it seemed wisest to perform an exploratory laparotomy under local anesthesia, and if his condition then warranted, to do something to the hand under ethylene.

6. The decision not to interfere with the probable kidney injury. Although it was known that there was a probable contusion and perhaps a fracture of the kidney with occlusion of the ureter on that side by clot, the condition was not considered grave enough to warrant immediate exploration. I recall several cases which recovered from kidney injury which were not treated as emergencies, but held for adequate

urological examination. In a little boy, as in this case, there was possible coincident renal and intra-abdominal injury. He had been struck in the left flank by a sled. He was in considerable shock. Urine was filled with blood. There seemed to be more spasm anteriorly than would be expected from a kidney injury. Exploratory was done under local anesthesia to determine this point. The spleen was found split in half, and was removed under ether. The kidney condition cleared up spontaneously. So here, it seemed more imperative to determine the intra-abdominal condition. Subsequently, the kidney injury might be investigated.

7. Should the maimed and denuded hand be sacrificed? The hand did not look good for much. The second, third and fourth fingers had been avulsed at the metacarpophalangeal joints. Practically all the skin had been torn off the back of the hand. There were small lacerations elsewhere on the hand. All was ground in with coal and soot. *But*, he was a manual laborer. *But*, it was his right hand. *But*, small stumps of the thumb and little finger remained. The flexors of the little finger, the dorsal and palmar interossei, the adductor and opponens of the thumb were apparently intact. Conservatism was worth trying. Having made this decision, after thoroughly cleaning up the hand, how much surgery should be done? I believe the best rule to follow in treating such lacerated hands is *only as much surgery as is consistent with good debridement*. No fashioning of tissues should be attempted. No immediate closure in badly lacerated hands like this should be attempted. Thorough cleansing, good debridement, no fashioning of parts, no closure, Dakin's treatment, is not only the safest but the wisest procedure. When the traumatic reaction has subsided, when the degree of subsequent infection is known and combatted, we shall know far better what function can be expected, we shall know far better what fashioning of tissues should be done. The desideratum in the initial treatment of these badly lacerated and maimed hands should not be a pretty job but a wise job.

PRE-OPERATIVE DIAGNOSIS OCTOBER 28

Fractured pelvis.
Traumatic amputation of right fingers.
Ruptured viscus?
Contusion (fracture?) of right kidney.
Shock.

FIRST OPERATION

With novocain, a three-inch upper left rectus muscle splitting incision was made. The peritoneum was opened without escape of gas or blood. There was a very slight amount of clear fluid present. The incision was increased in size under ethylene. The bladder and other viscera were found intact. A hematoma was

felt in the right flank posteriorly. The abdomen was closed.

The right hand was then cleaned with salt solution, it being covered with coal dust and soot. It was washed with ether and debridement performed. The index, middle and ring fingers were already disarticulated at the metacarpophalangeal joints except for a little skin and subcutaneous tissue. This tissue was divided, thus completing the amputation. The fifth finger was already partially amputated at the middle of the proximal phalanx. Amputation was completed and the bone rongeuired. The thumb was already partially traumatically amputated through the proximal phalanx. This amputation was completed and the bone rongeuired. There was no skin to cover the joint surfaces of the three middle fingers, but a flap was made for the fifth finger and held loosely in place by one silk suture.

FURTHER DISCUSSION

The patient left the table in as good condition as before operation. In fact during the exploratory under novocain his condition was so good that it seemed proper to clean up the hand at the same time under ethylene.

In the early days of illness the following problems arose:—

8. More definite determination of kidney injury by cystoscopy and urethral catheterization in patient's bed. Under morphine, five per cent. glucose by rectum, subpectorals of salt solution and alkaline water by mouth, the patient's blood pressure and pulse were so much improved the following day that cystoscopy and urethral catheterization seemed safe and proper. The results of this examination are given in the history. There was apparently contusion (perhaps slight fracture) of both kidneys without plugging of the ureters. Daily urinalyses were made and the blood gradually ceased.

9. Dealing with massive hematoma of back, extending from lower chest to coceyx. A fluctuant mass about the size of a cantaloupe in the right flank upon entrance was noted in the history. This hemorrhage rapidly spread into the back until there was a fluctuant area occupying the right side from the lower ribs to the coceyx. It was aspirated a couple of times with aseptic precautions. The loss of skin and contused tissue in the right flank upon entrance have been noted. This inevitably broke down and, as was feared, infected the hematoma. Culture of the fluid at the second aspiration showed streptococci. The area was so large and superficial that it seemed wisest and adequate to make several small openings at dependent points under novocain and insert tubes for regular Dakin's treatment.

PRE-OPERATIVE DIAGNOSIS NOVEMBER 11

Septic hematoma of back.

SECOND OPERATION

There was a fluctuant area which extended from the middle of the buttocks to the lower ribs and from the spine to the flank. With the patient on his left side three incisions about one inch long were made two inches from the spine, one at the upper end, one at the middle and another at the lower end. A great amount of thin pus-streaked blood was evacuated and a Dakin tube inserted in each incision to the opposite side of the cavity. The cavity was then flushed with Dakin's solution.

FURTHER DISCUSSION

The temperature became normal in three days.

10. The question of pulmonary infection. When the temperature was at 104°, although respirations were not greatly elevated, the right lung showed slight dullness and distant breath sounds at the base. A medical consultant could not exclude the possibility of a central pneumonia. Again the portable X-ray was called into use and excluded any area of consolidation or infarct. The reason for the rise in temperature as noted above was the infection of the hematoma. Two blood cultures made at the time were negative.

The patient was discharged on January 26 feeling well and walking without difficulty. There was still a granulating wound in the right groin where the body of the ilium had nearly sloughed through, another at the site of one of the drainage openings in the back, and another over the end of the fourth metacarpal.

Here is the patient today, well and strong, with all wounds healed. The exploratory abdominal incision is solid. The healed drainage wounds on the back give some idea of the size of the hematoma. The fractured crest of the ilium is displaced downward and adherent to the anterolateral aspect of the bone. A portion of the right lower quadrant of the abdomen is occupied by a scar the size of one's palm. This was caused by the sloughing of crushed tissues. Nearly the full thickness of the wall sloughed away, and there is in this area today a ventral hernia about two inches in diameter. This is soon to be closed with living suture after the method of Gallie. The hand is nearly healed. A stump of thumb and little finger are both well covered with skin and of normal sensitiveness. They can be approximated with considerable force so that objects of some weight can be handled. There is also forcible adduction of this thumb stump, making possible the use of pencil, knife, fork and spoon. He has recently painted and papered a room, holding the brushes in this hand. Although the hand was so lacerated and maimed on admission and seemed to some hardly worth saving, this end result demonstrates the wisdom of conservative surgery.

DIAGNOSIS

Fracture of the ilium.
Traumatic shock.
Contusion (fracture?) of the kidneys.
Crushed hand.
Traumatic amputation of fingers.
Massive hematoma of flank and back.

SEPTIC SORE THROAT IN GUILFORD

THE outbreak of septic sore throat now subsiding in Guilford presented a puzzle in diagnosis until laboratory results were obtained. Many patients at first had only a mild or moderately severe sore throat. After two or three days the symptoms abated, the patients felt well and went back to work. Then followed in several cases a relapse, often with severe abdominal symptoms. The symptoms on relapse were so severe as to completely overshadow the early throat condition. Abdominal symptoms had not been observed particularly as complicating former outbreaks of septic sore throat in Connecticut. Sore throat may be due to so many causes that doctors dealing with this outbreak hesitated to assign a cause until laboratory reports were received.

The germ called hemolytic streptococcus was found in the blood cultures of two patients. Another patient at autopsy was found to have died of streptococcus peritonitis. Thus it was apparent that the disease was due to a streptococcus, that this particular strain of streptococcus had a tendency to cause septicemia (blood poisoning) and peritonitis, and that the diagnosis should be septic sore throat rather than some strange hitherto undiscovered malady. Thus the elusive streptococcus demonstrates anew the reasons for its being a much feared germ. Five of the cases in the Guilford outbreak terminated fatally after relapse up to August 15.

The first task for an epidemiologist tracing the source of infection is a study of individual cases to ascertain the opportunities each may have had for becoming infected. Enough cases should be studied to serve as a representative sample of the whole. The information is then analyzed in the hope of finding a "common factor" or possible common source of infection for a considerable number of cases. In spite of its puzzling aspects a common factor was discovered for the Guilford outbreak in 28 hours from the time the State Department of Health first began its investigation.

Milk has been supplied to Guilford from four dairies supplying 225, 200, 60 and 40 quarts per day respectively. No milk was pasteurized. A check-up on the first 64 cases concerning which detailed information was collected showed that two cases had used milk from the 225 quart

supply, 58 cases from the 200 quart supply, one case from the 60 quart supply, and no cases from the 40 quart supply. In addition three cases in one family had used milk from their own cow. Of these three one became ill a few days before the others, thus apparently the other two contracted the disease from the first case.

This information left no doubt as to the source of many of the cases. Fifty-eight cases on two-fifths of the milk supply as against three on the other three-fifths could not possibly be the result of chance distribution. Accordingly the proprietor of the dairy was given the option of pasteurizing the milk or stopping its sale. The latter was chosen.

According to present views the streptococcus causing septic sore throat is of human origin. The germs may reach the milk either directly from a human case or carrier, or indirectly through a cow becoming infected from such case or carrier. In order to safeguard the public from further danger of infection by the same milk supply, careful examinations of all cows and all milk handlers connected with the dairy are now under way. When these examinations have been completed and both cows and milk handlers proven free from infection, the milk from this dairy will be safer than other milk of similar grade where such recent examinations have not been made.

Up to August 15, the State Department of Health had investigated 169 cases, and still had 19 cases listed for investigation, making 188 in all. This includes cases reported by physicians and discovered through inquiry. New cases have ceased to appear. No apprehension is felt as to further spread of the disease. It is likely, however, that some additional existing cases will be discovered.—*Bulletin Connecticut State Department of Health.*

WHY PERSONS IN CHARGE OF CHILDREN SHOULD BE IMMUNIZED AGAINST DISEASE

NIAGARA FALLS PLAYGROUND DIRECTOR CONTRACTS SMALLPOX

MANY CHILDREN EXPOSED

THE director of a playground in Niagara Falls was taken sick on July 7 while at the playground and went home. She reported for duty the following day but was forced to give up her work on account of headache and fever. As her family attributed her condition to the hot weather no physician was called until July 16 although a rash appeared on July 12. On the arrival of her physician the case was diagnosed as smallpox and she was taken to the city hospital. The patient had not been out of the city for a month and the source of the case has not yet been discovered.—*Health News, July 26, New York State Department of Health.*

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INFANTILE PARALYSIS

FIFTY cases of anterior poliomyelitis have been reported to the State Department of Public Health for the first three weeks of August—an average slightly more than the usual increase of cases over July. For the last five years from fifteen to twenty-five cases has been the usual incidence for July, with an increase during August to thirty to fifty cases. The disease cannot be said to be epidemic despite the slight increase over the endemic index.

Our last true epidemic of infantile paralysis was in 1916, and if the seven year rule was always true to form, 1923 should have been an epidemic year, but so far the epidemic year has failed to materialize. Whether another four years will elapse before it visits us in epidemic form we cannot say; certainly as each summer nears its close the increase in cases is viewed with apprehension, for among the communicable diseases we have no more dread visitor.

Poliomyelitis always strikes without warning; its severity cannot be abated; its complications seem to be unavoidable, and most important of all its virus and means of communication are unknown. Communication by direct contact is difficult to demonstrate, for more commonly

than not one member alone of a family is stricken. This has been blamed as intermediate hosts of the virus, for its prevalence seems always to increase during the fly season and drop abruptly with the onset of cold weather. One thing has been shown, that cases seem to group themselves around foci of infection, but whether these foci are healthy carriers or some other source of common infection cannot be ascertained. More concerning its epidemiology may be learned as recognition of the milder forms of the disease becomes more skilled; better recognition, in fact, may account for the apparent increased prevalence of the disease during the last few years. As with other infections and immunity-conferring diseases, it is possible that many mild, unrecognized and uncomplicated cases may occur, establishing an immunity without apparently having been visited by the infection, and accounting for the apparently bizarre way in which those in intimate contact with the disease fail to acquire it.

Little is to be said concerning the treatment of infantile paralysis. Convalescent serum was used in 1916 but with considerable question remaining concerning its value. Another epidemic will be necessary to learn finally how important this will be.

Every suspected case should be lumbar punctured and lumbar punctured frequently, not only to aid in establishing the diagnosis, but also as a therapeutic measure, for it is possible that relief of intra-cranial pressure may favorably affect the outcome. The introduction of hypertonic salt solution intravenously acts in somewhat the same manner and may be of value. Affected parts should be maintained in such positions as to relieve traction on groups of muscles undergoing paralysis. When the acute stage is survived the problem becomes an orthopedic one.

Little can be done for these cases during the acute stage, but that little may be of great importance. During the next two months in every case with fever of unexplained origin and particularly with muscle pain and tenderness, poliomyelitis must at least be considered as the possible diagnosis.

CHARLES W. ELIOT

THE JOURNAL, on March 20, 1924, commemorated the ninetieth birthday, which fell upon that day, of Charles W. Eliot. The following June he appeared for the last time before the Massachusetts Medical Society and addressed it at its annual banquet at Swampscott. His words were clear and full of wisdom, his intellect unimpaired as it remained for over two years more until his death last week.

Dr. Eliot took the presidency of Harvard College in 1869 and held it for forty years. As a famous emperor found Rome of brick and

left it of marble, so this great educator found Harvard College a small academy for men, and left it a great university. Harvard University is his lasting monument. We are mostly concerned with his relationship to the Medical School and to the Massachusetts Medical Society.

The former he raised from the ranks of a small and old fashioned school of local fame to a leading position in medical education—a position which it has consistently and honorably maintained—by means of the latter he entered, *in honoris causa*, into the brotherhood of physicians, for he was one of us, in sympathy and in understanding of our manifold problems.

Through the death of Dr. Eliot, full of years far beyond the allotted number of mankind, loaded with honors, universally beloved and respected, the Massachusetts Medical Society has lost its greatest member. Untrained in the art and technique of practice, he served medicine as few others in his life time have been able to do.

MENTAL HYGIENE AT YALE

THE establishment at Yale next fall of instruction in mental hygiene is announced by *Science*. This has been made possible by an appropriation of \$50,000 a year for five years from the Commonwealth Fund. Voluntary conference groups of limited size will be arranged for the freshman year in which the point of view of mental hygiene will be presented, and through which the students may become acquainted with the staff.

A lecture course will be opened to sophomores in Yale College and the Sheffield Scientific School, and an advanced course for seniors and juniors is planned which will cover special problems associated with vocational aptitudes.

The advisory committee is made up of Dr. Arthur H. Ruggles, professor of mental hygiene at Yale; Dr. Edward A. Strecker and Dr. Frankwood E. Williams, consultants in psychiatry; and Dr. Stewart A. Paton, chairman of the resident group in psychiatry and mental hygiene.

The resident staff will be composed of Dr. Lloyd Thompson, for the past year clinical instructor in psychiatry and clinical director of the Connecticut Society for Mental Hygiene; Dr. Clement C. Fry, assistant in psychiatry at the Harvard Medical School, and Major Harry N. Kerns, M.D., formerly psychiatrist at the United States Military Academy and this year chief medical officer at the Brooks Aviation Field, Texas.

NEW LIGHT ON THE CAUSATION AND TREATMENT OF LUNACY

THERE has been for some time in all countries dissatisfaction with the treatment of those suf-

fering from mental aberration. In Great Britain a few years ago this dissatisfaction came to a head with the Harnett case, which at the time was commented on in "London Letters" to this journal. The outcome in Great Britain was that a Royal Commission on Lunacy and Mental Disorders was appointed, the report of which was issued recently. The gist of this report is that in the opinion of the Commissioners there is no clear line of demarcation between mental illness and physical illness, and that consequently the keynote of treatment is not as heretofore believed and practiced, detention, but prevention and treatment. The report goes on to point out that prevention and treatment are the foundations of the science of medicine. Briefly put, lunacy practice must conform to the laws governing all forms of medical practice. Of course, this is not to say that involuntary detention should not be used when dealing with the mentally afflicted. It must be resorted to when necessary. For example, the mentally disordered are frequently unable to cooperate with the doctor in the treatment of their malady; they may resist curative measures even when it is known that these are for their benefit. And also it must be borne in mind that the mentally sick individual may be a menace to his relatives and neighbors, and must be restrained for these reasons.

But this restraint must only be used for the above reasons and not merely to get rid of troublesome persons.

In line with these views the Commissioners recommend that there should be no difficulty in securing mental treatment for those who submit to it voluntarily, and this without certification. Also, in the case of an involuntary patient, if there are hopes of early recovery it is recommended that facilities should be provided for treatment without certification for a period of one to six months under a provisional treatment order.

According to the findings of the Commission, certification should be the last resort of treatment and not as is too often the case in Great Britain at the present time a pre-requisite of treatment. The Commission further dismissed the charges which have been made of neglect and ill usage in asylums as generally unfounded. Certain measures of reform are advocated.

However, perhaps, the main interest of the report lies in the statement that frequently the basis of physical and mental sickness is more or less common to both, or rather that mental sickness frequently proceeds from physical causes and therefore can be often prevented or treated successfully. It has been contended with a considerable show of evidence that dementia precox is due or aggravated by gastrointestinal disorders. But the most conspicuous means of evidence going to prove the relationship between sickness of mind and body is that

afforded by the discovery that syphilis is the cause of general paralysis of the insane. This mental disease has become a problem of syphilis and has largely lost its psychological interest. As a matter of fact its successful treatment by malaria has placed it under the head of public health administration. The discovery that some mental disorders are closely allied with physical sickness and that by treating the primary cause or causes and not the symptoms only cure or relief will be effected, has opened a new chapter in medical treatment.

Further and deeper investigations into the subject may result in the discovery that more forms of mental disorder are derived from physical sickness with a correspondingly satisfactory outcome as to treatment.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MEANS, JAMES H., A.B.; M.D. Harvard Medical School 1911; Jackson Professor of Clinical Medicine, Harvard Medical School; Chief of Medical Service, Massachusetts General Hospital; Member of the Association of American Physicians, the Society for Experimental Biology and Medicine, etc. Address: Massachusetts General Hospital, Boston.

WHITE, PAUL D., A.B.; M.D. Harvard Medical School 1911; Instructor in Medicine, Harvard Medical School; Associate in Medicine, Massachusetts General Hospital and Chief of the Cardiac Clinic. Address: Massachusetts General Hospital, Boston; and

KRANTZ, CLEMENS I.; M.D. Johns Hopkins University Medical Department 1924. Address: Massachusetts General Hospital. They write on "Observations on the Heart in Myxedema," page 455.

FROTHINGHAM, CHANNING, A.B.; M.D. Harvard Medical School 1906; Assistant Professor of Medicine, Harvard Medical School; Physician to Peter Bent Brigham Hospital. His subject is "A Case of So-Called Influenzal Pneumonia," page 460.

MACCREADY, PAUL B., A.B.; M.D. Johns Hopkins University Medical Department 1921; Resident House Officer, Johns Hopkins Hospital 1921-1924 and Assistant in Laryngology 1922-1924. Fellow of National Research Council 1922-1924; Clinical Instructor in Surgery, Yale University School of Medicine 1924-1926. His subject is "Iodized Oil as an Aid in Diagnosis of Chronic Sinusitis and Maxillary Cysts," page 464. Address: 97 Grove St., New Haven, Conn.

CHASE, HARRISON A., Ph.B.; M.D. Harvard

Medical School 1905; Physician to the Goddard Hospital, Brockton, Mass. His subject is "Obstetrics in a General Hospital," page 467. Address: 129 West Elm St., Brockton, Mass.

MEAKER, SAMUEL R., A.B.; M.R.C.S. (England); M.D. Harvard Medical School 1915; Associate Professor of Gynaecology, Boston University School of Medicine. His subject is "A Further Note on Artificial Insemination," page 471. Address: 475 Commonwealth Ave., Boston.

CHEEVER, AUSTIN W., A.B.; M.D. Harvard Medical School 1914; Assistant in Syphilology, Harvard Medical School; Chief of Department of Skin and Syphilis, Boston Dispensary. He writes on Progress in Syphilis, page 473. Address: 472 Commonwealth Ave., Boston.

HUBER, EDWARD G. Detailed record on Page 291, No. 6 of Vol. 195. His article is a continued account of "The Control of Communicable Diseases in Massachusetts," page 476. Address: The War Department, Washington, D. C.

MISCELLANY

RHODE ISLAND MORTALITY STATISTICS: 1925

THE Department of Commerce announces that the 1925 death rate for Rhode Island was 1,211 per 100,000 population as compared with 1,248 in 1924. The principal decreases in rates in 1925 were from diarrhea and enteritis, under 2 years (from 24 to 19 per 100,000 population), appendicitis and typhilitis (from 18 to 13), scarlet fever (from 5 to 2) and suicide (from 11 to 8).

The principal increases in rates in 1925 were from nephritis (from 97 in 1924 to 118 per 100,000 population), diseases of the heart (from 193 to 212), influenza (from 10 to 19), and machinery accidents (from 2 to 9).

DEATHS IN RHODE ISLAND

	Number		Rate per 100,000 estimated population	
	1925	1924	1925	1924
All causes	8,226	8,337	1,211.0	1,247.9

—Department of Commerce, Washington.

SOME REACTIONS OF THE MEDICAL PRESS TO THE SMOOT BILL

THE Smoot Bill was introduced April 19, 1926. *The Journal of the American Medical Association*, May 8, published a long and scathing review of the bill; it says:

"State medical associations, county medical societies, and physicians may well communicate their views with respect to this bill to the President, the Secretary of the Treasury, the Com-

mittee on Finance of the Senate, and the Committee on Ways and Means of the House of Representatives, and to their respective senators and representatives."

The *Illinois Medical Journal*, June, suggests that individual members of the profession write the members of the Committee of the U. S. Senate and get busy with local legislators and congressmen. It calls on doctors to rebel against the practice of medicine by politicians and laymen, and reproduces the resolution of the White Cross.

California and Western Medicine for June has a long and carefully written article on the subject of irresponsible regulation and says, "Get it out of the hands of the tax collecting Bureau." This *California* article for June is preceded and followed by like long articles in their May and July issues.

The *American Medical Sentinel*, Portland, Oregon, for July, under caption of "The Narcotic Law" says, "too much arbitrary power is given to collectors (of federal revenue)."

American Medicine of New York City, June, "Map out a logical course dictated by knowledge, experience and common sense, and then predict that the one course diametrically opposite to this will be the one the legislators will inevitably take. The new proposal regarding the Harrison Act makes it manifest that this is a fair and unprejudiced estimate of the legislative mind."

The *Journal of the Iowa State Medical Society*, July, reproduces the White Cross resolution and calls on doctors everywhere to support it.

The medical journals of Brooklyn are speaking in the same tone.

The National Association of Retail Druggists says, "they are in thorough accord with the White Cross and feel sure that the American Medical Association will sympathize with the resolution they have adopted against the Smoot Bill, and will exert its very best efforts to the same end."

These are only a few expressions which happened to come before us. Doubtless the medical press everywhere is saying or will shortly be saying the same things. They cannot possibly talk any other way when they realize the situation.

The following resolution was adopted by the White Cross, Seattle, July 14, 1926:

"Whereas, there was introduced in the Senate of the United States on April 19, 1926, a bill (S. 4085) to strengthen the Harrison Act of December 17, 1914, as amended; and

"Whereas, it would seem desirable for the Congress of the United States, in connection with the consideration of such proposed amendatory legislation, and before any new legislation is enacted, to review the field of narcotic regulation with a view to adopting legislation which

will conform the regulation of such trade to the situation as developed by such an investigation,

"Now, Therefore Be It Resolved that the White Cross, Inc., request Honorable Reed Smoot, a member of the Senate and Honorable Stephen G. Porter, a member of the House to obtain a federal investigation by a Committee to be appointed for that purpose, of the narcotic situation in this country, with a view to obtaining a better understanding of the narcotics evil, and the adoption of such legislation as such an investigation will suggest."—*Bulletin of The White Cross.*

THE SMALLPOX EPIDEMIC IN FLORIDA

BEGINNING with December 4, 1925, there have been 427 cases of smallpox in Florida, 92 being among the whites and 335 among the colored, according to a report published in the *Journal of the Florida State Medical Association*. Not a single one of the 427 cases had ever been vaccinated.

Dr. J. M. Lowrey in a paper read before the May meeting of the Dade County Medical Society, stated that local papers would not report the facts, also that the efficacy of vaccination as demonstrated in this epidemic should convince even a Christian Scientist. Not a case of any serious result of vaccination has been known in the experience of this campaign in Florida.

FIFTH SEDGWICK LECTURE GIVEN AT WOODS HOLE, MASSACHUSETTS

The fifth William Thompson Sedgwick Memorial lecture was given this year on July 27th before a distinguished audience at the Marine Biological Laboratory at Woods Hole, Massachusetts. The lecturer on this occasion was Professor Thomas Hunt Morgan of Columbia University and the Marine Biological Laboratory, whose subject was "Genetics and the Physiology of Development." This dissertation will be published later in book form under the auspices of the Department of Biology and Public Health of the Massachusetts Institute of Technology, of which Professor Sedgwick was for many years the chief.

The Sedgwick Memorial lectureship was established in 1922 to perpetuate the memory of this great leader and to commemorate his services to the cause of biology and public health. Up to this year the lectures have been given annually at the Massachusetts Institute of Technology by men of distinguished eminence in the field of biology or public health. The previous lecturers have included: Dr. Edmund B. Wilson of Columbia University, Dr. William H. Welch of Johns Hopkins, Dr. W. J. V. Osterhout, formerly of Harvard and now with the Rockefeller Institute, and Dr. Charles V. Chapin, Superintendent of Health of Providence, R. I.

RECENT DEATH

ELIOT—CHARLES WILLIAM ELIOT, an honorary member of the Massachusetts Medical Society, died of the infirmities of old age, at his summer home at Asticou, near Northeast Harbor, Me., Sunday afternoon, August 22, 1926, aged 92 years.

America's most noted educator, president of Harvard University for a period of forty years, holding the degrees of A.M., M.D. Hon., LL.D. and Ph.D., he was instrumental in reorganizing Harvard Medical School in the seventies of the last century, and, more recently, in securing the new buildings for the school, on Longwood Avenue. During his presidency he devoted much time and thought to the improvement of medical instruction. His passing will be mourned by all friends of medical education, as well as by the public at large.

OBITUARY

JOHN WARREN ACHORN, M.D.

JOHN WARREN ACHORN, an eminent retired Boston physician, died at his summer home, Annisquam, in Gloucester, Mass., August 5, 1926.

He was born in Newcastle, Me., January 30, 1857, son of Dr. John Taylor and Clara Rundlett Achorn. He graduated at Bowdoin College in 1879, and from the Medical School in 1887. Subsequently he graduated from the Bellevue Medical College in New York and studied in Berlin, Germany. After service in the Berlin Charity Hospital, Brooklyn, N. Y., the City Hospital and the California Woman's Hospital he settled in Boston and practiced general medicine for years, after which he became a specialist in gastro-intestinal diseases, being called into court as an expert, where he stood high with the judges, who on many occasions acknowledged the value of his testimony.

He was a retired member of the Massachusetts Medical Society, but an active Fellow in the American Medical Association and the North Carolina Medical Association.

He contributed articles of real value to the medical journals of the country and wrote a number of pamphlets showing the importance of the mind as a dominating factor in the cure of ills that flesh is heir to. He was associated with the Rev. Dr. Elwood Worcester of Emmanuel Church in his movement, and was physician to the Invalid-Aid Society, of which the late Rev. Dr. E. E. Hale was a director. About the beginning of the World War he began to spend his winters at Pinebluff, N. C., where he became interested in matters of public health and the preservation of animal and bird life of America. He traveled much and made many addresses before public bodies and urged legislation on Congress. He devoted much time to stimulating a love for birds among children and spent many of his last days collecting data and prepared pictures for a book on the birds of North Carolina, having the co-operation of the Roosevelt

Foundation, the Smithsonian Institution and some of the leading men of the country.

Dr. Achorn leaves his wife, who was Miss Harriet Priscilla Sawyer, and a brother, Edward O. Achorn, of Brunswick, Me.

CORRESPONDENCE

AN ERROR CORRECTED

Mr. Editor:

In the interest of accuracy may I say that the New Hampshire Medical Society is not as claimed by the *Boston Herald* the oldest medical society in the nation?

Howard Pillsbury, in a two-column article, gives the date of the charter as 1791. The sigillum of the Massachusetts Medical Society bears the figures 1781 and the New Jersey Society was chartered even earlier.

Such history is indeed "bunk." Hence these tears.

SAMUEL B. WOODWARD.

P. S. The *Herald* has been given an opportunity to correct its misstatement, but so far as I know has not seen fit to.

CHANGE OF DATE OF MEETING OF THE NEW HAMPSHIRE SURGICAL SOCIETY

Editor, *Boston Medical and Surgical Journal*:

The date of the fall meeting of the New Hampshire Surgical Society has been changed from September 6 to September 13. Please announce in next issue.

Very truly,

JAMES B. WOODMAN, President.

THE ESTIMATION OF SUGAR IN URINE AND BLOOD IN THE DOCTOR'S OFFICE

Editor, *Boston Medical and Surgical Journal*:

In response to many requests made at the recent meeting of the Massachusetts State Medical Society in Springfield, June 8-9, I am sending for publication an outline of the micro methods in use in the Chemical Laboratory at the New England Deaconess Hospital for determining the amount of sugar in urine and in blood.

These methods are designed to determine sugar in very small amounts of blood and urine and therefore require a special technic. With a certain degree of careful work the technic can be acquired by the average physician, but too much emphasis can not be laid upon the necessity of mastering this technic and becoming familiar with color comparisons before relying upon the results obtained. In the hands of careful workers the method gives results which compare very favorably with the results obtained by using the Folin-Wu direct method.

GLASSWARE AND CHEMICALS REQUIRED FOR BOTH TESTS

(A) For Urine

- 1 pyrex test tube 16x150 mm.
- 1 Millard Smith pipette No. 2
- 1 Ostwald-Folin 1 cc. pipette
- 1 5 cc. pipette
- 1 50 cc. graduated cylinder
- Small pebbles
- 1 micro burner or alcohol lamp
- Sodium carbonate C. P. anhydrous

(B) For Blood

Glassware

- (1) 0.2 cc. pipette grad. in 0.1 cc.
- (2) 1.0 cc. pipette grad. in 0.1 cc.
- (3) Standard tube A
- (4) Graduated tube B
- (5) 2 conical tubes C
- (6) 1 straight Hagedorn needle or blood lancet
- (7) 2 capillary pipettes
- (8) 1 centrifuge (electric, water, or hand capable of 1000 r.p.m.)

Chemicals

These are the same reagents used in the Folin-Wu method.

Sol. I. 1.25% sodium tungstate sol. (neut.)

Sol. II. 2/3 N. Sulfuric acid

Sol. III. Standard glucose sol. (Folin-Wu strong standard)

Sol. IV. Alkaline copper sol.

Sol. V. Phosphomolybdic acid reagent

PROCEDURE AND TECHNIC

Estimation of Sugar in Urine

1. With an Ostwald-Folin 1 cc. pipette measure accurately 1 cc. of Benedict's quantitative solution into a pyrex test tube 16x150.

2. Add a pinch of sodium carbonate (dry anhydrous) and a small dry pebble.

3. Rinse the Millard Smith pipette once with the urine to be tested and fill to the 100.00 mark. The lower edge of the meniscus should just touch the highest graduation on the pipette.

4. Heat solution in test tube to boiling by means of micro burner or a small alcohol lamp.

5. Add urine, drop by drop, from the pipette, boiling after each drop until the solution has lost all trace of a blue or green color. Care should be taken to regulate the boiling so that the volume in the test tube remains nearly constant. This requires a little practice but can be mastered very quickly. The tendency is to go past the end point because the reduction takes place more slowly than the ordinary titration. This results in too low a percentage of sugar. When nearing the end point, the urine must be added slowly, the solution boiling for several seconds between each addition of a drop.

6. Read the per cent. directly on the pipette. The height of the liquid in the pipette represents the per cent. of sugar in the specimen tested.

Any urine which gives a green color in the qualitative test can be titrated.

A urine which gives a green color with Benedict's qualitative test can be titrated without dilution as indicated by the above procedure. If a yellow, orange or red color is formed, dilute the urine as follows: Place 5 cc. of urine in a 50 cc. graduated cylinder and add water to the 50 cc. mark. Mix well and titrate as indicated above. The percentage read on the pipette multiplied by 10 is the correct sugar percentage.

This method is a micro modification of the Benedict method developed by Dr. Millard Smith in this laboratory in 1922, and full details will be found in the *Journal of Laboratory and Clinical Medicine*, 1922, 7, 1.

Estimation of Sugar in Blood

The method in use in this laboratory, and demonstrated in Springfield, is a direct micro modification of the Folin-Wu* blood sugar method. Sufficient blood for the test can be obtained from the ear or from the finger.

* F. C. (1) Folin and Wu, J. B. C., 919, 41, 367.

1. With the 1 cc. pipette measure 0.4 cc. of sodium tungstate sol. I. into a small, dry conical tube.

2. Puncture the ear with a small lancet or Hagedorn needle and let the blood which flows rise in the 0.2 cc. pipette to the .15 cc. mark. The pipette must be thoroughly dry and clean. (This constitutes 0.05 cc. of blood as the pipette is graduated from top to tip.)

3. Wipe the outside of the pipette, adjust the meniscus at the mark and allow the blood to drop slowly into the tube containing .04 cc. of solution I. If this is done carefully the blood drains perfectly from the pipette.

4. Blow out the last drop carefully and rinse pipette once with the mixture.

5. Mix well by rotation between the palms.

6. Rinse pipette once with water and once with solution II and draw up solution II to the .15 mark.

7. Blow into the diluted blood and mix well by covering mouth of tube with the finger and shaking vigorously.

8. Place the small tube in a centrifuge tube and centrifuge at moderate speed for four minutes.

9. With a dry capillary pipette transfer the clear supernatant fluid to another small dry tube.

10. Rinse the 0.2 cc. pipette once with water and then once with a small amount of the unknown solution, prepared as in (9) above.

11. Pipette 0.1 cc. of the clear fluid into graduated tube B, taking care to wipe outside of pipette before lowering liquid to the 0.1 mark.

12. Rinse the same pipette with some of the standard sugar solution III and then measure 0.1 cc. of this standard into standard tube A. The outside of the pipette must be wiped before adjusting the meniscus.

13. Rinse the same pipette with the copper solution IV and measure 0.1 cc. into each tube.

14. Place tubes in an enamelware cup of boiling water for six minutes.

15. Cool the tubes in cold water for one minute.

16. Rinse the pipette with water and measure 0.1 cc. of Phosphomolybdic acid reagent V into each tube. A deep blue color is formed.

17. With a capillary pipette add water to tube A up to the mark and invert once, closing the tube with the finger.

18. Add water to the graduated tube B up to the first graduation.

19. Close tube with finger and invert once. Do not allow any of contents to escape.

20. Hold the two tubes side by side close to a light with a piece of white paper between them and the light and compare the colors.

21. If color in tube B is darker than that in tube A add water to the next graduation, mix as before and compare.

22. Repeat the addition of water until the color in the two tubes match each other exactly.

23. The figure at the level of the fluid in tube B represents the per cent. of sugar in the blood.

Care should be taken to have the outside of the pipette dry whenever making measurements, as the carrying of excess solution into the determination will interfere with the results. This method is used in the New England Deaconess Hospital only for doing blood sugars on children and on other patients into whose veins it is inadvisable to put a needle. It is not designed to replace the Folin-Wu procedure used for routine work. It has been found to compare very favorably with the Folin-Wu direct method and in the hands of a person capable of pipetting with accuracy and making close color comparisons, it gives results well within the range necessary for clinical purposes. It requires a very inexpensive set of apparatus and the technic can be acquired with a little practice.

The complete apparatus for testing sugar in urine as described above may be obtained from the E. F. Mahady Company, 671 Boylston Street, Boston, Mass., or from the Emil Greiner Company, 55 Fulton Street, New York, N. Y.

A few sets for determining sugar in blood by the micro method as described above have been made up containing apparatus and reagents. For the present these may be obtained for about five dollars from the Hospital Diabetic Store at the New England Deaconess Hospital. If the demand warrants, arrangements will be made with local dealers to distribute this special apparatus. Small bottles containing preservative for collecting blood in the home, can also be obtained at the store, at a nominal cost.

The technic of either of these methods may be observed in this laboratory and all who wish to get more details about them are welcome at any time. It is advised that anyone attempting to use the micro method for blood should do several checked analyses and if possible make check determinations with the direct method on several bloods before relying upon the method in his hands. Special instruction is possible in our laboratory if anyone desires.

Yours very truly,

HAZEL M. HUNT.

Chemical Laboratory,
New England Deaconess Hospital.

NOTES FROM THE NATIONAL CAPITAL

(From Our Washington Correspondent)

Although Congress is not in session and there is, consequently, no federal legislation of interest to physicians to be reported, there is, nevertheless, much going on in the executive departments with which physicians should be familiar, and there is an occasional court decision of significance to the medical profession.

UNITED STATES PUBLIC HEALTH SERVICE ITEMS

The fourth Federal trachoma hospital in the country has recently been established by the United States Public Health Service at Richmond, Ky. The other three hospitals are located in Arkansas, Missouri and Tennessee. Aside from the work of these hospitals, but in connection with the general efforts to eradicate this disease, 136,551 Indians have been given physical examinations, according to an announcement of the Department of the Interior made early in July. Of this number, 27,943 were discovered to have trachoma, and eye operations were performed on 8,457. Treatment was given to about 19,400 others. The Office of Indian Affairs is in direct control of the health work for Indians, but has the cooperation of the Public Health Service, an officer of which is now detailed in charge of the Washington headquarters of the Medical Service of the Indian Office.

Tularaemia has occurred in six more laboratory workers who have been experimenting with this disease. Tularaemia is a disease found in rabbits, mostly in the mountain states of this country. It is contracted by man, in many cases by cleaning rabbits, according to the Public Health Service. Experiments on the disease are being conducted at a station in Montana and at the Hygienic Laboratory at Washington.

A sanitary engineer of the Service is now stationed at Norfolk, Va., for the purpose of inspecting drinking water and culinary water supplies on steamships engaged in the South Atlantic interstate traffic. This engineer will later proceed to Charleston and Savannah.

The General Accounting Office has allowed an expenditure requested by the Public Health Service

for the purchase of small guns to shoot animals which carry Rocky Mountain spotted fever. The purpose is not to attempt to eradicate the disease by this means, but to secure specimens for experimental purposes.

UNITED STATES CHILDREN'S BUREAU NOTES

Six countries have lower infant mortality rates than does the United States, according to a statement issued by the Children's Bureau on July 7. The rate in the United States is 71 deaths per 1000 live births, while the rates in the countries which are said to be better are as follows: Norway, 55; Australia and the Netherlands, 57; Sweden, 63; and Switzerland, 70. New Zealand also has a better rate, while the highest is that of Chile, which is 306. The Children's Bureau has likewise issued a statement entitled "What the Children's Bureau is Doing for Mothers and Babies," in which, among other things, it is declared that ignorance and poverty have been found to be the chief underlying causes of infant mortality. These deductions are based on a canvass of 24,000 mothers in various cities.

Various other statements have recently been issued by this bureau, including advice on infant feeding, the prevention of rickets, and a plea for the care of the pre-school child, in the course of which it is stated that 19,000,000 of the 22,000,000 school children in this country have physical defects.

OTHER BUREAU MATTERS

The Division of School Hygiene of the Bureau of Education has announced that a survey shows that 35 States now have physical education laws and that in 15 States directors of physical education are employed by the State.

The Bureau of Chemistry of the Department of Agriculture has found that the medical efficacy of waters having slight radioactive properties is of comparatively little value, in spite of the extravagant claims made by the purveyors of such waters. A warning is issued that so-called radium waters which do not conform to the Pure Food Law will be summarily dealt with.

The Bureau of Fisheries has published a bulletin entitled "The Nutritional Value of Fish and Shellfish." It is Bulletin No. 1000 and is issued as an appendix to the 1925 report of the Commissioner of Fisheries.

The Bureau of Standards is conducting experiments on the radiation from carbon arc lamps, with a view to the possible utilization of such light in the cure of disease. This bureau will exhibit at the Sesqui-centennial Exposition in Philadelphia, among other things, a special instrument for determining the accuracy of haemocytometers.

The Division of Vital Statistics of the Bureau of the Census has announced that West Virginia has been admitted to the Federal birth registration area, which now includes 33 States and the District of Columbia.

FEDERAL HEALTH CORRELATION

It is worth noticing in the above notes that eight bureaus or divisions which have conducted activities of medical or public health interest are mentioned. There are, furthermore, many other administrative units of the national government which carry on work directly or indirectly related to the public health. The correlation of these activities, which are now scattered through the ten Cabinet departments, is essential and so admitted by all persons cognizant with the situation. Yet a reasonable piece of legislation such as the Parker bill (H. R. 10125) to achieve such correlation, is stated by the Director of the Budget to be contrary to the President's financial policy.

SENATOR RANDELL ON PUBLIC HEALTH

A very sane statement of the government's function in public health matters was made during the closing days of the Sixty-ninth Congress by Senator Randell of Louisiana. His contention was that research was the principal duty of the government in connection with the public health. He has introduced a bill to provide increased appropriations for this type of work, a bill which has been previously discussed in this JOURNAL. A quotation from his remarks may be of interest: "National vitality is more important to a country than its commerce, agriculture, industry, finance, foreign affairs, public works, or any other legitimate function of government. It affects the welfare of the nation more than all other problems combined." If this attitude would become contagious, infectious, and communicable in the United States Senate, there might be some hope for public health legislation.

TARIFF ON SURGICAL FORCEPS REDUCED

The tariff rate on surgical forceps has been reduced from 60 per cent. ad valorem to 45 per cent. in accordance with a recent ruling by the United States Customs Court at New York. The question was whether surgical forceps were dutiable as hand forceps under one paragraph of the tariff law, or as surgical instruments under another. The court decided that surgical forceps are surgical instruments, incapable of any use except in the science of surgery. The result of this decision ought, logically, to be a reduction in the price of such instruments.

LONDON LETTER

(From Our Own Correspondent)

London, July 31, 1926.

MEETING OF THE BRITISH MEDICAL ASSOCIATION

The ninety-fourth annual meeting of the British Medical Association was held at Nottingham from July 16 to July 23. The first three days were devoted to the meeting of the Representative Body. A great deal of important business was discussed. Proposals were considered to enlarge the scope of the scientific meeting. Brighton proposed the institution of a Section of the History of Medicine and were supported by Edinburgh, which city was particularly anxious that it should be inaugurated on the occasion of the Association's visit to Edinburgh next year, which will coincide with the Lister centenary celebrations. Edinburgh further proposed Sections of Venereal Diseases and Radiology. Sir Robert Bolam and Dr. Brackenbury both pointed out that the Representative Body had never hitherto interfered with the arrangements for the scientific meeting. It was the custom of the Arrangements Committee, composed of six local members and six nominated by the Council, to advise from year to year what sections should be held. It was agreed that the Council be requested to consider the desirability of instituting a Section of the History of Medicine at the annual meeting, and of forming Sections of Venereal Diseases and of Radiology at the meeting held in Edinburgh in 1927.

Dr. P. A. Parry proposed on behalf of the Sussex Branch: that the Council be instructed to investigate the subject of psycho-analysis and report on the same. This motion seems to have been taken by the advocates of psycho-analysis as an attempt to attack this method of treatment and was the cause of some contentious discussion. It appears that at the meeting last year Dr. Parry rather suggested that criminal practices were so common that it was the duty of the B. M. A. to express condemnation. Dr. W. Muir Smith said that the Sussex Branch had not receded an iota from their original position and

their object was to condemn the unnecessary emphasis of psycho-analysis on the sexual aspect of the question. Dr. W. H. Douglas, said he saw no reason why the public should not be told what psycho-analysis was and what it did. Dr. H. D. Woodroffe spoke on behalf of the general practitioner, who was more affected than anyone else. Dr. Fothergill said that the work of psycho-analysts emphasized only one aspect of medicine and was doing harm. The supporters of psycho-analysis defended its practice warmly and one of its chief adherents pointed out that in psycho-analysis there was so far no common ground of agreement; it was the topic which most acutely divided professional opinion today. Psycho-analysis had as yet no fixed foundation; it was at the growing point of medical theory and was totally inappropriate for committee methods. It was much more properly dealt with by debate and report such as the Royal Medico-Psychological Association had instituted so as to try to sift the truth from the falsehood. The mere definition of the term would lead to a prolonged wrangle. Dr. Parry had said that there was a public demand, but not whether the profession as a whole was longing for direction and advice. He was out to condemn in advance and not to search for knowledge. What was the committee to do when it had formed the opinion Dr. Parry hoped for? Was it to excommunicate those who did not agree? In the long run that which was false would drop out and that which was true would stand; it would be no credit to set up a committee which might throw doubt on the truth. The safeguard of the public in such matters, where enthusiasm was likely to carry people away, was to go to their ordinary medical adviser and their interests would be well looked after.

The Council seem to be very chary of making such investigation. No doubt its members are well aware how the situation as regards psycho-analysis is hedged in with almost innumerable difficulties. In the first place psycho-analysts are prone to contend that persons must be experts on the subject in order to make a satisfactory investigation. This appears to mean that they wish to be both judged and judges. The question of psycho-analysis seems to be so vague as to be incapable of scientific analysis. However, the motion of Dr. Parry was carried by a considerable majority, which goes to show that the rank and file of the profession in Great Britain are profoundly dissatisfied with the existing situation and distrustful of some, at least, of those who practice the method. Perhaps a discussion of this greatly vexed question may do good. It is just as likely that it may not help matters in the least. It seems fairly certain that its advocates will not be bound by the conclusions of a committee which they will avow is prejudiced. How to obtain an impartial decision is impossible, seeing that professed psycho-analysts will refuse doubtless to sit on any committee of the kind.

The presidential address given by Mr. R. G. Hogarth, Senior Surgeon of General Hospital, Nottingham, discussed preventive medicine largely in relation to State socialism. He also dealt with a question almost as much vexed at the present time in Great Britain as psycho-analysis: that of spiritual healing. He pointed out that with regard to the religious and quasi-religious healer, the medical profession was in a difficult position; obvious difficulty arose when a new theory and practice of the art of healing was proclaimed and taught in terms of religion and religion in terms of health. The whole of the profession would await with impartial mind the results of the labors of the joint committee which was investigating the phenomena of spiritual healing. Meanwhile, Mr. Hogarth said with confidence that any systematized creed which professed to dispense with the art of medicine and surgery was false to the divine.

But if any possessed the precious gift of ministering to the mind diseased, or of imparting to those who walked in the valley of the shadow the courage to move serenely among the phantoms and horrors which haunted that road, let them be sure that such a gift could only emanate from a divine source, and let them welcome the help of any unseen wings that stirred the air with healing.

Dr. Godfrey Carter, Senior Surgeon to Sheffield City Police, delivered an address on the legal definition of childbirth. He contended that a child born at a viable period should be deemed to have been born alive unless satisfactory proof be forthcoming to the contrary. Inattention at birth was in most cases, he was satisfied, criminal. A resolution was adopted requesting the Council to approach the Government to secure legislation to protect children against intentional violence before they were completely born. Roman Catholic doctors attended a conference to consider the subject of the "Sterilization of the Unfit." Dr. Colvin said that today people discussed complex and abstruse questions of sex with the same glibness of tongue as they discussed the face and figure of the latest film star. Boards of guardians had passed recently resolutions in favor of sterilization of the unfit, the full import of which they knew as little about as they did of the shortage of housing on the planet Mars.

Lieutenant-Colonel O'Gorman said that the number of mental defectives would not be lessened by sterilization. Mental defectives would still require institutional treatment so that the cost to the community if sterilization were adopted would be probably more rather than less.

A resolution was adopted that sterilization was not only immoral but was likewise futile in preventing mental deficiency.

Other features of the British Medical Association meeting will be discussed in a future letter.

AN OBJECTION TO A BOOK REVIEW

524 Commonwealth Avenue, Boston, Mass.,
August 21, 1926.

Editor, Boston Medical and Surgical Journal:

In the current August 5 issue of the JOURNAL, a reviewer of my recently published book, "The White Spots of Epilepsy and Other Phases of the Disease," makes an erroneous statement, that, in the interests of accuracy and sound medical practice, calls for a correction.

The reviewer writes: "He [Tracy] believed that in epilepsy a sympathetic hypertonia leads to chronic vaso-constriction spots and that treatment, therefore, should be by the sympathetic paralyzant, oenanthe crocata."

In my book it is shown that oenanthe crocata is curative in incipient epilepsy, a phase of the disease so carefully described in the context that only a grave oversight could justify the reviewer in using the unqualified term epilepsy, which universally retains its classical meaning, identical with our *grand mal*.

That there may be no misconception of my belief caused by this error, let me state that oenanthe crocata is *useless* in the treatment of epileptic convulsions: this belief being based upon a careful testing of the drug in a large number of cases of chronic *grand mal*.

Like Lady Macbeth, in her famous "Out, damned spot!" scene, your reviewer's field of consciousness was apparently restricted by the "white spots"; how otherwise explain the omission in his statement of the real basis of my belief, as given in the book, why oenanthe crocata should be used in the treatment of incipient epilepsy, viz.: Incipient epilepsy manifests itself by a sympathetic hypertonia demonstrated by vaso-motor testings, and this hypertonia was found quellable by oenanthe crocata, likewise demonstrated

by vaso-motor testings; and the symptoms of disease disappeared, with the hypertonia, under the use of the drug.

An appreciative note that I missed in the review was the simple statement of the fact that the book is the result of an extension into the field of epilepsy of a vaso-motor research previously instituted and reported by the author.

Sincerely yours,

EDWARD A. TRACY, M.D.

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING AUGUST 14, 1926

Diphtheria	14	Dysentery, bacillary	1
Last week	16	German measles	1
Diphtheria bacilli carriers	4	Influenza	4
Whooping cough	2	Mumps	4
Last week	37	Pneumonia, lobar	15
Scarlet fever	20	Pollomyelitis	1
Last week	14	Septic sore throat	192
Measles	15	Tuberculosis, pulmo-	
Last week	78	nary	40
Typhoid fever	13	Tuberculosis, other	
Last week	7	forms	6
Bronchopneumonia	15	Gonorrhea	47
Chickenpox	5	Syphilis	12
		Chancroid	1

MORBIDITY REPORT FOR THE WEEK ENDING AUGUST 21, 1926

Diphtheria	8	German measles	3
Last week	14	Influenza	2
Diphtheria bacilli carrier	1	Malaria	1
Typhoid fever	2	Mumps	2
Last week	4	Paratyphoid fever	2
Scarlet fever	13	Pneumonia, lobar	11
Last week	14	Pollomyelitis	1
Measles	13	Septic sore throat	30
Last week	15	Tetanus	1
Whooping cough	25	Trachoma	1
Last week	37	Tuberculosis, pulmo-	29
Bronchopneumonia	5	nary	
Cerebrospinal meningitis	1	Tuberculosis, other	
Chickenpox	5	forms	1
		Gonorrhea	18
		Syphilis	20

NEWS ITEMS

ELECTION OF RALPH R. PATCH—Mr. Ralph R. Patch has been elected president of the American Pharmaceutical Manufacturers' Association.

Mr. Patch is president and general manager of the E. L. Patch Company of Boston. His father, the late Edgar L. Patch, the founder of this company, was connected with the Massachusetts College of Pharmacy for many years and was an important factor in the development of this college.

MASSACHUSETTS DOCTORS ARE WORKING IN THE UNIVERSITY POSTGRADUATE MEDICAL COURSE IN NORTH CAROLINA—Following is a list of the lecture subjects which the course will include:

1. Dr. Howard B. Sprague, Instructor—(1) Types of Heart Disease, with Special Consideration of Rheumatic Heart Disease. (2) Functional Heart Disease and the Arrhythmias. Important Physical Signs of Heart Trouble. (3) Angina Pectoris: Diagnosis and Treatment. (4) Treatment of Heart Disease.
2. Dr. Dwight O'Hara—(5) Blood Diseases, includ-

ing the differences between the primary types and secondary types of anemia. (6) Obesity and Diabetes Mellitus. (7) Hypertension and its end results, including Nephritis. (8) The essential points of health examinations; the process of growing old as it may be revealed by the health examination; euthanasia, or medical treatment in aid of an easy death.

3. Dr. Edward S. Emery, Jr., Instructor—(9) Gastric and Duodenal Ulcers. (10) Functional Disturbances of the Intestinal Tract. (11) Diagnosis and Treatment of Gall Bladder Disease. (12) Conditions Simulating Gastro-intestinal Disease.

Each of the instructors is a graduate of Harvard Medical School and is a specialist in his field, with actual experience in practice. Dr. Sprague is resident cardiologist in the Massachusetts General Hospital, Boston; Dr. O'Hara is lecturer in therapeutics, Boston University School of Medicine; Dr. Emery is junior associate in the Peter Bent Brigham Hospital of Boston.

HARVARD SCHOOL OF PUBLIC HEALTH—Members of the administrative board of the School of Public Health of Harvard University for the year 1926-27 are: President Abbott Lawrence Lowell, David Linn Edsall, Milton Joseph Rosenau, Ernest Edward Tyzzer, Edwin Bidwell Wilson, Hans Zinsser and William Lorenzo Moss.—*Science*.

DR. BENEDICT ATTENDING CONGRESS OF PHYSIOLOGY—Dr. Francis G. Benedict, director of the Nutrition Laboratory of the Carnegie Institution of Washington, recently left Boston to attend the Twelfth International Congress of Physiology, to be held at Stockholm in August. He will then make an extended tour of scientific institutions in the different European countries, and will return to Boston about January 1.—*Science*.

APPOINTMENT OF DR. BOYDEN—Dr. E. A. Boyden, of the Harvard Medical School, has been appointed an associate professor of anatomy in the Medical Department of the University of Illinois.—*Science*.

DR. GEORGE RECEIVES HONORARY DEGREE—The faculty of Tufts College has conferred the honorary degree of Doctor of Science upon Dr. Ariel W. George.

CHICAGO ROENTGEN SOCIETY—At the annual meeting of the society the following officers were elected for the ensuing year: Edward S. Blaine, M.D., president; W. T. Bronson, M.D., vice-president; Robert A. Arens, M.D., secretary-treasurer. The executive board consists of the following: E. L. Jenkinson, M.D., Benjamin H. Orndoff, M.D., and M. J. Hubeny, M.D.

A CHILDREN'S UNIT AT ST. LUKE'S, NEW BEDFORD—A modern hospital unit costing \$225,000 has been added to St. Luke's Hospital, New Bedford. This is a two-story fireproof building with a capacity for 65 beds. By this addition St. Luke's becomes one of the largest hospitals outside of Boston.

NOTICES

BUREAU OF THE PUBLIC HEALTH SERVICE WASHINGTON

NOTICE OF EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Examinations of candidates for entrance into the Regular Corps of the United States Public Health

Service will be held at the following named places on the dates specified:

At Washington, D. C.	October 4, 1926
At Chicago, Ill.	October 4, 1926
At New Orleans, La.	October 4, 1926
At San Francisco, Calif.	October 4, 1926

Candidates must be not less than 23 nor more than 32 years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily oral, written and clinical tests before a board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon-General, United States Public Health Service, Washington, D. C.

H. S. CUMMING, *Surgeon-General*.

INTERNATIONAL POSTGRADUATE MEDICAL COURSES IN BERLIN

It is announced that international postgraduate medical courses are to be held in Berlin from October 4 till October 30. They will be organized jointly under the medical faculty of the Berlin University, the organization of the Empress Friedrich House, and the Assembly of Academic Lecturers. They consist of:

I. Progressive instructive course covering the advancement of general medicine, with due regard to the latest therapeutics—October 4 to 16.

II. Progressive instructive course on the department of urology—October 18 to 30.

III. A progressive instructive course of special departments of all branches of medicine—a fortnightly one from October 18 to 30 and a monthly one from October 4 till October 30.

All further information may be obtained from Kaiserin Friedrich-Haus, Berlin, NW 6, Luisenplatz 2-4.

AUTUMN MEETING OF MASSACHUSETTS STATE NURSES' ASSOCIATION

The Massachusetts State Nurses' Association will hold its autumn meeting at Hotel Bancroft, Worcester, Mass., October 8 and 9. Friday will be given to registration and welcoming of guests and delegates. Saturday will be devoted to papers and discussions of nursing problems by leaders in medical and nursing profession.

MARY ALICE McMAHON, *Chairman*,
Publications and Press.

THE NORFOLK COUNTY HOSPITAL

The seventh annual report of this Hospital states that of the cases admitted "17 were minimal cases of pulmonary tuberculosis; 29 were moderately advanced, and 66 were advanced cases. One was a case of tuberculous peritonitis and two cases were not classified. Sixty-nine were of American birth and 46 were of foreign birth. Fifty-six were married; 49 were single, and 10 were widowed. The average age was 36 years, the youngest being 12 and the oldest 77. Of the patients discharged, 2 were classified as arrested; 5 as apparently arrested; 8 as quies-

cent; 37, improved; 19, unimproved and 42 died. The average duration of residence of the discharged patients was 198 days. The longest residence was 1228 and shortest one day.

"Fifteen cases were referred to the hospital by the United States Veterans' Bureau and were paid for by that Bureau. Board for 127 cases was paid for by the cities and towns in the hospital district. Forty-four cases were supported from private funds and 10 cases partly from private and partly from public funds.

"From the attached Treasurer's report it will be seen that the total amount expended was \$136,667.21. Of this, \$2,009.93 was for new construction and new permanent equipment. Deducting this from the total amount expended leaves the net cost of maintenance, \$134,657.28. Since 32,106 days of treatment were given the net cost was \$4.194 per patient per day or \$29.35 per patient per week.

"On June 1 a Training School for Attendant Nurses was started under the direction of the Superintendent of Nurses. The proposed course is for one year. We now have 10 pupils in the School and the results thus far have been very satisfactory.

"The camp for undernourished boys was opened on July 1st for its second season. A frame building 20 feet square had been added to the equipment and the capacity increased to 36 beds. Thirty-eight boys were admitted during the season. A few of these did not stay the whole period, the usual daily census being 32. The camp closed on August 26. The results achieved were very satisfactory. Every boy showed improvement in physical condition. The average gain in weight was 7.37 pounds. The average gain in height was one half inch. Two boys gained 15 pounds each while one boy gained one and a quarter inches in height."

REPORTS AND NOTICES OF MEETINGS

HAMPSHIRE-FRANKLIN DISTRICT MEDICAL SOCIETIES

JOINT meeting of these societies was held Wednesday, August 11, 4 P.M., South Deerfield, Hotel Lathrop.

Mr. Maurice S. Sherman of the Springfield Union spoke on "The Workings of the 18th Amendment as Touching the Medical Profession," and State President Dr. James Savage Stone was present as guest.

MEETING OF THE SOUTHEASTERN ASSOCIATED BOARDS OF HEALTH

ON Wednesday, July 28, the Southeastern Massachusetts Associated Boards of Health held

their annual meeting in Sandwich, Mrs. Jennette M. White of the town board of health being the committee of arrangements. The business included the election of officers, those of last year being retained, the executives being president, W. Fred Delano of Fairhaven and Secretary, G. Webster Hallett of Osterville. Three honorary members were proposed and elected, Dr. George H. Bigelow, state commissioner of public health; Dr. Clarence L. Seamman, director of the department of communicable diseases in the state department of public health and Mr. John Ritchie of Malden.

There were two broad subjects for discussion, the first referring to the health department attitude towards communicable diseases and the second, presented by the secretary, included good advice to those who are considering the introduction of septic tanks. Dr. Seamman, who presented the paper in the matter first named, drew at once the difference in procedure between that of the small village and town and that usual in cities. His company being representative of the first class, his outlines were directed especially to their needs, going into considerable detail in speaking of the modern ideas of quarantine, release, etc. These at the present time seem to have no real standard, each community being a law unto itself, with considerable differences in procedure. There was much discussion and light was shed on various questions puzzling to local health officers.

The reason for the preparation by Mr. Hallett of a paper on septic tanks lies in the recent development of a number of sections of the Cape, improvements that have involved systems of disposal of sewage not necessary in ordinary rural communities. The opportunity has brought to the fore the manufacturers and sales agents of various disposal methods, and there is lack in smaller town managements of information on the subject. Mr. Hallett spoke as a practical plumber and drain provider for just the kind of community that is now developing, and his paper was filled with information useful to his hearers, and at its close there was much discussion.

More than thirty health officers from almost as many towns on the Cape were in attendance.

MEETING OF THE BERKSHIRE DISTRICT SOCIETY

THE Berkshire District held a meeting at Williams Inn, Williamstown, Thursday, August 5, which was attended by 40 members. The speaker was Dr. Thomas H. Halstead, Professor of Oto-laryngology at the University of Syracuse, who spoke on "Intra-Cranial Complications of Otitis Media, the Diagnosis and Treatment."

Dr. Halstead gave a very interesting classification of the symptoms, urged the use of X-ray

examination as a routine in all cases where disease of the mastoid cells may be suspected, and strongly urged that when the mastoid was opened the cells should be very thoroughly and completely cleaned. He cited a number of very interesting case histories to illustrate his point. Dr. Thompson, of North Adams, and Drs. Barrett and Norton of Pittsfield, discussed the paper, and told of their experiences with this condition.

CLINICAL CONGRESS, CONNECTICUT STATE MEDICAL SOCIETY

SEPTEMBER 21st, 22d AND 23d, 1926

Preliminary Announcement

The second Clinical Congress of the Connecticut State Medical Society will be opened at 10 A.M., Tuesday, September 21st, and the last paper will be presented at 4 P.M., Thursday, September 23d. All sessions of the Congress will be held in Sprague Memorial Hall in College Street, corner of Wall.

Program

The program for the Congress is not yet completed. At this time it may be announced that there will be nineteen papers presented during the days of the Congress and there will be two evening sessions, the first to be a Round Table Conference on Periodic Health Examinations, the second a Smoker at the New Haven Lawn Club.

The following titles and speakers have been definitely arranged:

The Trend of Medical and Surgical Treatment of Tuberculosis.—Allen K. Krause, M.D., Associate Professor of Medicine, Johns Hopkins University.

Diseases of the Larynx.—Louis H. Clerf, M.D., Assistant Director of the Bronchoscopic Clinic, Jefferson Medical College.

Progression and End Results of Hypertension.—Henry Christian, Boston.

Some Clinical Results with Liver Extract in Arterial Hypertension.—William J. MacDonald, M.D., St. Catherine's, Ont.

Critique of Gland Therapy.—R. G. Hoskins, Columbus, Ohio.

Periodic Medical Examination. — Haven Emerson, M.D., Professor of Public Health Administration, College of Physicians and Surgeons, Columbia University.

Discussion opened by Tasker Howard, M.D., Clinical Professor of Medicine, Long Island College Hospital, and George Blumer, M.D., Clinical Professor of Medicine, Yale University.

Present Status of Arthritis and Its Treatment.—C. F. Painter, Boston.

Physiotherapy. Its Use by the General Practitioner.—James Warren Sever, M.D., Instructor

in Orthopedic Surgery, Harvard Medical School.

Low Backache.—Robert B. Osgood, Boston. Group Demonstration of Periodic Health Examinations.

Diagnosis and Treatment of Cerebro-spinal Syphilis.—Edward Livingston Hunt, M.D., Assistant Professor Clinical Neurology, College of Physicians and Surgeons, Columbia University.

The Relation of Modern Physiologic Research to "Stomach Trouble."—J. Shelton Horsley, Richmond.

Fracture of the Hip in the Aged.—Frederic J. Cotton, Boston.

*At The New Haven Lawn Club,
Whitney Avenue and Sachem Street*

Tuberculosis and Pregnancy. — Professor Edouard A. Rist, Co-Director the Laennec Hospital and Dispensary for Tuberculosis, Paris, France.

Present Status of Gall Bladder Diagnosis.—Lester R. Whittaker, M.D., Instructor in Surgery, Harvard Medical School.

The Diagnosis of Bone Disease in Children.—A. C. Christie, Washington.

Treatment of Ear Diseases by the General Practitioner.—Philip D. Kerrison, M.D., Surgeon to the Manhattan Eye and Ear Hospital.

Infant Feeding.—R. G. Dennett, New York. Certain Phases of Congenital Syphilis.—C. Morton Smith, M.D., Clinical Professor of Syphilis, Harvard Medical School.

Prostatectomy, When and Why.—Hugh Cabot, Ann Arbor.

How the Pathology Explains the Symptoms and Signs of Ectopic Pregnancy.—John O. Polak, M.D., Professor of Obstetrics and Gynecology, Long Island College Hospital.

Accommodations

Yale University has assigned one of the College Dormitories for the use of the members of the Congress. Rooms in this Dormitory may be occupied for \$1.50 per night. Most of the rooms accommodate more than one person and an effort will be made to assign rooms with room-mates of your own choosing if reservations are made early. The Dormitory is large enough to accommodate all desiring rooms. If hotel rooms are preferred they may be had at the usual rates and such reservations should be made directly with the hotel.

Meals

The University Dining Hall will be in operation during the Congress. Luncheon on each of the three days will be provided for all members of the Congress without extra charge. Breakfast and dinner may be obtained in the Dining Hall at reasonable rates.

Garage and Parking

An automobile park for cars of the members of the Congress will be provided near the meeting place. Garage space will be provided for over-night storage.

Telephone

Twenty-four hour telephone service will be maintained at Sprague Hall and the Dormitory throughout the Congress.

Abstracts of Papers

Each speaker will be asked to prepare an abstract of his paper and following the Congress these abstracts are to be printed and bound. One copy of this volume will be sent to each member of the Congress.

Fee

The fee for the Congress will be ten dollars. This fee includes admission to all sessions of the Congress including the Smoker on the second evening. It also includes luncheon on each of the three days of the Congress, parking space and garage for your car, and one copy of the printed abstracts of the papers presented. It does not include the use of rooms in the Dormitory or breakfasts or dinners in the Dining Hall.

Registration

It will aid the Committee on Arrangements if early enrollment is made. A Registration Card and addressed envelope are enclosed. Fill out the card and return it with your check for ten dollars. Checks should be drawn to Frank H. Wheeler, Treasurer, and the fee will be refunded on request if it is not possible for you to attend the Congress.

Address all inquiries regarding registration and accommodations to

DR. CREIGHTON BARKER,
129 Whitney Avenue,
New Haven, Connecticut.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

- Surgical Clinics of North America.* June, 1926, Vol. 6, No. 3. Philadelphia and London: W. B. Saunders Co. 793 pages. Price per clinic year: Paper, \$12; cloth, \$16.
- Electrothermic Methods in the Treatment of Neoplastic Diseases.* By J. Douglas Morgan. Philadelphia: F. A. Davis Co. 172 pages. Price, \$2.50.
- Lehrbuch der Harnanalyse.* By Ivar Bang. Munchen: Verlag von J. F. Bergmann. 146 pages.
- Radiotherapy in Relation to General Medicine.* By Frances Hernaman-Johnson. New York: Oxford University Press. 211 pages. Price, \$1.75.
- Diseases of Children.* By Hector Charles Cameron. New York: Oxford University Press. 199 pages. Price, \$1.75.
- Studies in Intracranial Physiology and Surgery.* By Harvey Cushing. New York: Oxford University Press. 146 pages. Price, \$3.25.

The Surgery of Gastro-Duodenal Ulceration. By Charles A. Pannett. New York: Oxford University Press. 154 pages. Price, \$3.25.

Brain and Heart. By Giulio Fano. New York: Oxford University Press. 142 pages. Price, \$2.75.

Pathology and Treatment of the Inflammatory Diseases of the Nasal Accessory Sinuses. By M. Hajek. St. Louis: C. V. Mosby Co. Two volumes, totalling 702 pages. Price, \$17.

A Laboratory Manual for Elementary Zoology. Libbie Henrietta Hyman. Chicago: University of Chicago Press. 182 pages. Price, \$2.50.

The Human Cerebrospinal Fluid. New York: Paul B. Hoeber, Inc. 568 pages. Price, \$10.

Surgery of Neoplastic Diseases by Electrothermic Methods. By George A. Wyeth. New York: Paul B. Hoeber, Inc. 298 pages. Price, \$7.50.

Gonorrhea and Other Diseases of the Thyroid Gland. By Arnold S. Jackson. New York: Paul B. Hoeber, Inc. 401 pages. Price, \$10.

The National Government and Public Health. By James A. Tobey. Baltimore: Johns Hopkins Press. 423 pages. Price, \$3.

The X-Ray in Embryology and Obstetrics. By W. A. Newman Dorland and Maximilian John Hubeny. St. Paul, Minn.: Bruce Publishing Co. 420 pages. Price, \$10.

Cannula Implants and Review of Implantation Techniques in Esthetic Surgery. By Charles Conrad Miller. Chicago: Oak Press. 99 pages. Price, \$2.

The Modern Treatment of Hemorrhoids. By Joseph Franklin Montague. Philadelphia and London: J. B. Lippincott Co. 296 pages.

Die Chirurgie. By M. Kirschner and O. Nordmann. Berlin: Urban & Schwarzenberg. Lfg. 11. Price, M 10.-

Random Talks by an M.D. By M. W. Pearson. Boston: Richard G. Badger. 120 pages. Price, \$2.

The Evolution of Orthopaedic Surgery. By ROBERT B. OSGOOD, M.D. St. Louis: C. V. Mosby Company. 1925.

The Wayne County Medical Society of Michigan has recently issued in book form the lecture delivered by Dr. Robert B. Osgood in compliance with the terms of the Detroit Orthopaedic Lectureship Foundation, under the auspices of that society. As this was the first lecture delivered under the foundation it was altogether fitting that Dr. Osgood should have selected for subject "The Evolution of Orthopaedic Surgery." The lecture is a review of how and by whom the various parts composing the framework of knowledge upon which this specialty depends were produced and put together. One after another, the reader is presented to the men who have made the basic contributions to this knowledge and it told in what these contributions consisted. Dr. Osgood has a broad conception of the field of orthopaedic surgery and believes that knowledge is the common heritage of all medicine. This is shown by the inclusion of such names as Hippocrates, Vesalius, Paré, Petit, Hunter, Delpech and others in the list of orthopaedic forebears. The author reveals his profound admiration for these master minds by constantly showing how small observations were developed logically into large conclusions and by the little emphasis placed upon the circumstances leading up to the discovery. Progress

is shown to have resulted from a combination of genius and industry in which chance played but a small part.

The volume contains entertaining and instructive reading for any member of the medical profession but is of particular value to orthopaedic surgeons. The latter will feel a debt of gratitude to Dr. Osgood for having collected and condensed into convenient space information which heretofore has not been readily available to them.

Diseases of the New Born. A Monographic Handbook by JOHN A. FOOTE, M.D., Professor of Diseases of Children, Georgetown University Medical School. J. B. Lippincott Company.

This handbook of two hundred pages is the outgrowth of a symposium on the new-born child, prepared by the teaching members of the Georgetown University Clinical Society. Chapters are included on Injuries and Accidents in the New-Born, by Wm. F. O'Donnell; Care of the New-Born Child and Digestive Disturbances, by James M. Moser; Skin Affections, by F. J. Eichenlant; Methods and Procedures in Diagnosing and Treating Conditions in the New-Born, by John F. O'Brien and John A. Foote; and Problems of Prenatal, Natal and Neonatal Mortality, by Prentiss Wison. Most of the chapters, however, are by Dr. Foote himself.

Nothing strikingly new is embodied. The book is a compendium of simple facts regarding the care and the diseases of the new-born infant, presented briefly and clearly. Many of the illustrations are excellent.

The Diagnosis, Treatment and End Results of Tuberculosis of the Hip Joint. By GEORGE PERKINS, M.Ch. Oxon., F.R.C.S. Eng., Assistant Surgeon to the Royal National Orthopaedic Hospital, Assistant Surgeon to Byford Orthopaedic Hospital, Orthopaedic Registrar, St. Thomas's Hospital. Humphrey Milford, Oxford University Press.

Perkins' book of 115 pages is a reprint of his Robert Jones Prize Monograph of 1924, under the Auspices of the British Orthopaedic Association. He reviews the end results of 50 cases of tuberculosis of the hip joint in an attempt to discover whether "the self-satisfaction of the present day surgeon in regard to treatment is justified." His conclusion is obviously that it is not.

The importance of early diagnosis is stressed. For this early diagnosis he depends on the experience of the surgeon and tuberculin reactions, chiefly the focal and general reaction of subcutaneous injections of Koch's old tuberculin for a positive diagnosis. Casual reference is made to biopsy and guinea pig inoculations as the only sure methods, but Perkins

evidently believes that the former is not usually justifiable in hip joint disease and that material for the latter is hard to obtain. He points out the important fact that the condition of the patient on discharge from an open air hospital does not represent the final end result, and we are surprised that he does not more definitely call attention to the frequency of recrudescence of the disease years after its apparent complete arrest.

The original site of the disease has played a very important part in the end result of well treated cases in Perkins' series. In acetabular disease the results are best as to function and motion. He recognizes "synovial" disease, but reports only one case in which the affection seemed limited to this tissue. If the disease starts in the neck of the femur and can be here limited, the results are also excellent. If the disease starts in the head and affects the epiphysis, the results other than the ankyloses are bad, and the disease in the majority of cases does involve the head.

Under Diagnosis, he considers limp as the constant early sign and pain and poor general condition as variable and sometimes absent symptoms. He makes a sound evaluation of the relative importance of diagnostic signs and symptoms and gives various practical methods of determining the quiescence of the disease and the proper time for the beginning of convalescent treatment.

The treatment he divides into general and local. The general is all important, fresh air, sunlight, good food; the local, a combination of recumbency, immobilization and traction. He discusses early operative treatment in cases in which the head is seriously diseased and considers that it is a theoretically sound procedure to hasten ankylosis. He underestimates, however, the difficulty of securing an intra-articular arthrodesis in children and adults by the only methods he outlines.

The monograph is an excellent piece of investigation, but we could have wished that in reporting his end results he had given his proof that the cases reported were tuberculosis and had stated the length of time which had elapsed since functional use had been allowed. The book is fully illustrated by Roentgenograms of types of the disease often in instructive series and by photographs and drawings of apparatus and methods of treatment.

Nervous and Mental Disorders From Birth Through Adolescence. By B. SACHS, M.D., Consulting Neurologist to Mount Sinai and Montefiore Hospitals; Physician to Manhattan State Hospital; Ex-President of the American Neurological Association, and LOUIS HAUSMAN, M.D., Instructor in Neuro-Anatomy, Cornell University Medical College; Assistant in Neurology, Mount Sinai Hospi-

tal. Published by Paul B. Hoeber, Inc., New York. Price \$10.00.

This volume contains the most complete treatment of the subject available. The various neurological syndromes as they occur in children are adequately described. For many reasons the work is valuable as a book of reference. On the other hand, it has certain failings, perhaps quite inevitable ones. The emphasis on certain diseases bears little or no relation to their incidence in pediatric practice. For instance, fifty pages are devoted to progressive muscular atrophies, fifteen to multiple sclerosis, whereas Mongolian Idiocy is not given any appreciable space and is not mentioned in the index.

In the discussion of mental disturbances D. Sachs whole heartedly attacks the Freudian attitude towards children. However much one may sympathize with his onslaught he does not furnish any very tangible method of dealing with the various conduct disturbances.

The bibliography is carefully prepared, but has too little relation to the text. The whole volume has the virtues and the faults of a highly specialized point of view. The problems which the pediatrician refers to the neurologist are adequately considered, while many equally baffling neurological problems which are usually handled by pediatricians are given only cursory attention.

Experimental Pharmacology as a Basis for Therapeutics. By DR. HANS H. MEYER, Professor of Pharmacology, University of Vienna, and DR. R. GOTTLIEB, Late Professor of Pharmacology, University of Heidelberg. Second Edition in English translated by Velyien E. Henderson. Professor of Pharmacology, University of Toronto, From the Seventh Revised German Edition. 656 Pages. Illustrated, 87 figures partly in colors and 2 colored plates. J. B. Lippincott Company, Philadelphia, London and Montreal. 1926.

It is a great pleasure to read such a book as this, for it is just the type of pharmacology which must appeal to everyone interested in the scientific evidence concerning the action of our present drugs. The age of nihilism in pharmacology, particularly in America, must soon come to an end if we are to advance our therapeutic methods. We badly need books which tell us accurately the evidence for and against the use of various drugs, and this large text book of 656 pages accomplishes this very well. The book besides containing accounts of most interesting experiments has the advantage of being a good English translation of a German text purified by seven thorough revisions. It contains a vast amount of information with large bibliography and excellent physiological descriptions, and the description of drugs is based upon their effects upon these physiological reactions. While pri-

marily a text book for students of pharmacology this book will also appeal to a large number of clinicians who want to know the evidence of scientific observation rather than of clinical opinion.

Diseases of the Skin. By RICHARD L. SUTTON, LL.D., F.R.S. (Edin.), Professor of Diseases of the Skin, University of Kansas School of Medicine; Asst. Surgeon U. S. Navy, Retired; Member of the American Dermatological Association; Dermatologist to the Atchison, Topeka, and Santa Fe Hospital Association; Dermatologist to the Christian Church Hospital. Sixth Edition, revised and enlarged. Published by the C. V. Mosby Company, St. Louis, Mo. Price \$12.00.

The sixth edition surpasses the fifth edition in a number of ways. A few recently described dermatoses have been included and a number of new photographs and photo-micrographs have been added. The quality of the photographs throughout is very remarkable as regards the choice of subjects and skill in obtaining the exact effect desired, and in reproduction. There are 1147 illustrations and eleven colored plates. The care in the choice of references makes the book valuable to advanced students and investigators as well as practitioners.

Modern Medicine. Its Theory and Practice. Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S. Third Edition. Thoroughly Revised. Re-edited by THOMAS McCRAE, M.D., assisted by ELMER H. FUNK, M.D. Vol. II. Lea and Febiger. Philadelphia and New York. 1925.

This second volume of the third edition of Osler's System is, like its predecessor, divided into seven parts. Grouped in Part I under the heading "Diseases of Doubtful or Unknown Etiology" are smallpox, chickenpox, vaccinia, measles, typhus fever, dengue, rheumatic fever and rabies. A chapter on numerous other fevers of doubtful etiology by Thomas R. Boggs has been revised by Dr. Funk. Part II is devoted to protozoan infections—amoebic dysentery, malaria, blackwater fever, trypanosomiasis and Leishmaniasis. The chapter on trypanosomiasis by Sir David Bruce has been revised by George C. Low. In Part III the spirochetal infections are considered—Syphilis, yaws, yellow fever, the relapsing fevers and rat-bite disease. The chapter on syphilis written by Sir William Osler and John W. Churchman has been revised by Lewis A. Conner, and the chapter on yellow fever by the late James Carroll has been revised by Dr. McCrae. Part IV is given up to a general discussion of diseases due to animal parasites by Charles W. Stiles, Ph.D. In Part V, under the heading, "Diseases Due to Physical Agents" are grouped sunstroke, caisson disease, altitude sickness and the untoward effects of electricity. In

Part VI are treated diseases due to chemical and organic agents. One chapter is devoted to the chronic metallic poisonings, another to narcotic poisoning, another to food poisoning and another very timely one to poisoning from carbon monoxide, illuminating gas, nitrus fumes, benzole and benzine. Part VII, entitled "The Deficiency Diseases," deals with scurvy, rickets, pellagra and beri-beri.

Modern Medicine, Its Theory and Practice.

Edited by SIR WILLIAM OSLER, Bart., M.D., F.R.S. Third Edition, thoroughly revised. Re-edited by THOMAS MCCRAE, M.D., assisted by ELMER H. FUNK, M.D. Vol. III. Lea and Febiger. Philadelphia and New York, 1926.

This third volume of the third edition of Osler's System is divided into two parts. Part I is concerned with diseases of metabolism. The first chapter is an exhaustive discussion of metabolism from the point of view of the practitioner by Dr. Eugene F. DuBois. Dr. Thomas B. Fletcher contributes the chapters on diabetes and gout, and Dr. James M. Anders the chapter on obesity.

Part II deals with diseases of the digestive system. It opens with an introductory discussion by Dr. Charles G. Stockton. The chapter on diseases of the mouth and salivary glands by Dr. David Riesman has been revised by Dr. Henry K. Mohler. Dr. Chevalier Jackson and Dr. Louis H. Clerf contributed to the paper on diseases of the oesophagus. Functional diseases of the stomach are discussed by Dr. Julius Friedenwald and organic diseases of the stomach by Dr. Charles F. Martin and Dr. Cobin Sutherland. The chapter on diseases of the intestines is contributed by Dr. Alfred Stengel. Dr. Eugene L. Opie discusses diseases of the pancreas and Dr. Edward J. Wood contributes a paper on sprue. The chapter on diseases of the liver, gall bladder and biliary ducts by the late Dr. A. O. J. Kelly has been revised by Dr. Vincent Lyon. Sir Humphrey Rolleston contributes a paper on diseases of the peritoneum and the final chapter on ptosis is written by Dr. Thomas R. Brown.

An Introduction to The Study of X-ray and Radium. By HECTOR A. COLWELL and CECIL P. G. WAKELEY, Oxford University Press.

As the authors state, this book is intended solely as an introduction to the study of X-ray and radium. No attempt is made to treat the subject exhaustively. It is not a text book on diagnosis and therapeutics, but may well be used to serve the purpose for which the author intended it. The subject matter is presented clearly, briefly, and in simple terms which should recommend it to physicians in general.

The book includes chapters on such important

subjects as: The Preparation and Measurement of Radium Emanation (Radon) Applicators for Therapeutic Purposes; The Actions of Radiation upon Normal Living Tissues, with some notes on their Chemical Action; Protection Methods, and the Protection Committee's Report.

There is also an appendix which contains much useful information, including a definition of the units used in measurements; a table of Ossification and Fusion of the Epiphyses and an outline of Anatomical Landmarks.

The first chapter contained a very good history of the work leading up to the discovery of the X-ray by Roentgen. The chapter on apparatus gives rather more space to coils and gas tubes than would be expected in a modern work on this subject, also in the chapter on Treatment by X-ray very little is said of the recent methods of measuring dosage, or of the use of short wave X-ray. The chapters on the Preparation and use of Radium are excellent. There is also a very good discussion of the effect of irradiation on the various tissues of the body.

Of special importance is the chapter on "Protection Methods."

The book should be read by all workers with X-ray or radium.

Nursery Guide for Mothers and Children's Nurses. By LOUIS W. SAUER, Ph.D., M.D., Second Edition. St. Louis. The C. V. Mosby Company. 1926.

This short guide book, first published in 1923, has now been somewhat enlarged and improved in its second edition. Its most striking features are that it is clear, concise and brief, and consequently readable and of value. Much useful information is found within its covers.

According to the notions of some, Dr. Sauer might be considered a little conservative in beginning varied diets; others would certainly question the statement that methods of diagnosis, prevention and cure of scarlet fever have been perfected, or that children should be immunized against scarlet fever before going to school. At the present date active immunization is altogether too uncertain to warrant its general use.

Dr. Sauer recommends the routine use of iodized salt in the diet during pregnancy. Such advice, while it may apply in the Great Lakes region, is not necessarily generally applicable.

Hydrogen Ion Concentration of the Blood in Health and Disease. By DR. J. HAROLD AUSTIN, Professor of Research Medicine, University of Pennsylvania, and Dr. Glenn E. Cullen, Professor of Biochemistry, Vanderbilt University. Medicine Monographs: VIII.

62 pages. The Williams & Wilkins Company, Baltimore, U. S. A. 1926.

This is a very concise and satisfactory summary of the important facts known today in regard to the maintenance of a constant Hydrogen Ion concentration. So much work has recently been done on the Hydrogen Ion concentration of the blood, upon acidosis, and alkalosis, and their relation to health and disease that it is of great value to have this whole subject summarized in concise form. This book has done this very satisfactorily in a text which is only 62 pages long and has a very satisfactory bibliography attached to it. It is written in a very readable, understandable, and simple way. It is highly recommended to all workers in our clinical laboratories who desire a good summary of this quite complicated subject.

Principles and Practice of Endocrine Medicine.

By WILLIAM N. BERKELEY, PH.D., M.D., Recently Attending Physician at the Good Samaritan Dispensary, New York, and One Time Director of the Laboratory of Experimental Medicine, Cornell University Medical College. 368 Pages. Illustrated, 56 engravings and 4 colored plates. Lea & Febiger, Philadelphia and New York, 1926.

Dr. Berkeley has tried to summarize in a rather concise manner the knowledge which is of importance in the clinical conception of the internal secretions. He has done this very conservatively. He has realized that the treatment of internal secretions is dependent upon a clear understanding of their physiological actions, but he has not complicated the subject by quoting endless facts for and against each point of view. Of course the symptoms and diagnosis are taken up fully and treatment is handled conservatively. This book must be of considerable interest to all general practitioners, as it states in a simple manner our present knowledge of the internal secretions as a practicing physician should know it.

Hay Fever and Asthma. A Practical Hand-book for Physicians and their Patients. By RAY M. BALYEAT.

The idea of this little book is excellent. To teach patients the general principles of hypersensitiveness and to lead them to study the cause of their troubles is a welcome object of real value.

Dr. Balyeat's book can certainly be "easily understood by the average patient." Indeed, the text is almost too simple. The illustrations of domestic animals and ordinary plants provide good emphasis but one is disappointed to find such a poor picture of Ragweed and no picture at all of Timothy.

The general arrangement is poor and the class-

ification of foreign substances is not considered, nor is the relation to season, occupation, or environment well brought out. Food asthma appears between asthma from feathers and asthma from face powder.

The case histories which fill the last 41 pages give the impression that the diagnosis is usually clear cut and easy and that the treatment is simple and effective. To describe in some detail the course of a few of the many long and difficult cases would have stimulated the patient's coöperation to the maximum and would have saved him from disappointment later.

One or two misstatements need correction in later editions. It was an Anglo-Saxon and not a Jewish merchant who financed Walker's original investigations. Ten per cent is too high a figure for the proportion of cases due to food. Failure to refer under legislation to the various hay fever associations is unfortunate. It seems unnecessarily alarming to state that "children with hives—whose parents—had asthma or hay fever might expect asthma or hay fever when they become adults."

The character of the book is typified by this sentence on Page 101—"The same sort of swelling (as in hay fever) occurs in the bronchial tubes, but there is no other way for the air to pass from the outside to the bottom of the lungs, consequently nature must arrange some way to get rid of this mucus that gathers in the bronchial tubes; so a marked spasm of the tubes takes place, forcing this mucus out, thereby causing asthmatic attacks."

Modern Methods of Feeding in Infancy and Childhood. By DONALD PATERSON, B.A., M.B. (Edin.), M.R.C.P. (Lond.), Physician for Diseases of Children, Westminster Hospital; Physician to Out-Patients' Hospital for Sick Children, Great Ormond Street; Physician to the Infants' Hospital, Westminster, and J. FOREST SMITH, M.R.C.P. (Lond.), First Assistant to the Clinical Unit, St. Thomas's Hospital; late John and Temple Research Fellow in Diseases of Children, St. Thomas's Hospital. Paul B. Hoeber, Inc., New York, 1926.

This book is one of the Modern Medical Monographs edited by Hugh Maclean of the University of London. In it are described simply and practically, as the title implies, the most useful modern feeding methods, including breast feeding. The book is quite thoroughly up to date, agreeing in principles, as well as in much of its practice, with methods in vogue in this country. American pediatricians, on reading in two places that vitamin A is an antirachitic principle, would feel that the authors are behind the times in their conception of the pathogenesis of rickets. The use of proprietary foods is given more space than is customary in American publications.